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**INTERNATIONAL RAILWAY CONGRESS**  
**ASSOCIATION**  
(ENGLISH EDITION)

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[ 333 (06.112) ]

**TENTH SESSION**

LONDON : 22 JUNE-1 JULY 1925.

**GENERAL PROCEEDINGS**

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**4th Section : GENERAL**

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**INAUGURAL MEETING**

23 June 1925, at 9.30 a. m.

PROVISIONAL PRESIDENT : SIR EVELYN CECIL,  
MEMBER OF THE PERMANENT COMMISSION OF THE ASSOCIATION.

The President. — As provisional President of this section, I beg to propose to you, in the name of the Permanent Commission, Dr. Julius H. PARMELEE, Director of the Bureau of Railway Economics in the American Railway Association, as effective President, and Mr. Lucien SANTINI, Engineer to the Service of Supplies on the Paris, Lyons and Mediterranean Railway, as Principal Secretary. (*Applause.*) I have no doubt that under their direction the work of the section will be excellent.

— Dr. Parmelee then took the chair.

Dr. Parmelee. — Gentlemen, it is an honour of which I am deeply sensible to be proposed and elected by you as effective President of this section, to deal with a most important branch of the work of the International Railway Congress. My only wish is that the section may be able to function as effectively as our honourable provisional President has expressed the hope that it will, and that we may be able to work together during the three or four days' work of the section effectively and efficiently.

I regret that I am unable, as our Chairman has done, to express myself in

the French language, and ask for your kind consideration, as I shall only be able to make my suggestions and remarks in the English language. Mr. Santini, our Principal Secretary, will be kind enough to translate what I have to say into French.

On behalf of the 4th section, I express to Mr. Clower and to the other two reporters, Mr. Velani and Mr. Soulez, whom we are pleased to see here, our sincere thanks for the very clear and interesting way in which they have presented to us their various reports. Please accept our thanks, Gentlemen.

I have now, Gentlemen, to introduce to the 4th section the members of the Secretariat, so that we may know each other and be fully acquainted. It will of course be unnecessary to introduce the delegate who was good enough to open the proceedings this morning, The Right Hon. Sir Evelyn Cecil, member of the Permanent Commission, who has favoured us very kindly with his presence. We trust that he will remain with us

throughout the remainder of our session. It is also unnecessary to introduce our Principal Secretary, Mr. Santini.

I now propose as Vice-Presidents :

Mr. J. EBERHARDT, Engineer, Under-Secretary of State of the Polish State Railways;

Sir Herbert A. WALKER, General Manager, Southern Railway (Great Britain);

Dr. C. C. WANG, C. E., Ph. D., Chief Advisor to the Chinese Ministry of Communications, ex-President of the Chinese Eastern Railways, General Manager of the Chinese Government Railways,

and Mr. R. H. WILBUR, Vice-President and General Manager, Lehigh Valley and New England Railroad (United States).

(Applause.)

— The Section, on the proposal of the President, completed its Secretariat, and adopted a provisional agenda.

— The meeting terminated at 9.50 a. m.



## QUESTION X

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### THE EIGHT-HOUR DAY.

*The eight-hour day on the railways.*

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#### Preliminary documents.

1st report (Switzerland, Italy, Spain and Portugal), by Mr. L. VELANI. (See English edition of the *Bulletin*, May 1925 (2nd part), p. 1997, or separate issue [with red cover] No. 46.)

2nd report (all countries, except Switzerland, Italy, Spain, Portugal, America and the British Empire), by Mr. SOULEZ. (See English edition of the *Bulletin*,

May 1925 (2nd part), p. 1735, or separate issue [with red cover] No. 43.)

3rd report (America and the British Empire), by Mr. W. CLOWER. (See English edition of the *Bulletin*, May 1925 (1st part), p. 1481, or separate issue [with red cover] No. 38.)

Special reporter : Mr. W. CLOWER.

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## DISCUSSION BY THE SECTION

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Meeting held on 23 June 1925 (morning).

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Dr. J. H. PARMELEE, PRESIDENT, IN THE CHAIR.

— The meeting opened at 10.0 a. m.

**The President.** — Before proceeding to the consideration of the eight-hour day, which is our subject for this morning, may I remind the Section that the various reporters who have submitted reports on that subject have had their reports considered and digested by a special reporter? The special reporter will this morning present his summary of the reports on that subject. Following that special report there will be a general discussion of the subject by the Section.

I understand that where remarks are made in English they will be translated into French and where they are preferably made in French they will be translated into English, in order that full understanding of them may be had by all delegates. Further, may I remind you that the discussion from the floor by members of the Section should be as clear and as concise and as much to the point as is possible, for we have an important topic to discuss and a comparatively short time in which to cover it? By making our discussion clear and concise



we may cover the whole ground and may be enabled to make to the Congress a summary report that will be worthy of our time and our efforts.

I thank our secretary for adding to my remarks what had been overlooked by me, that is, the request that each member of the Section when he rises for general discussion should give his name, number and the Administration or Government to which he belongs, in order that our daily record of proceedings, which is later to be made a part of the record of the whole Congress, shall be as accurate as possible. We bespeak the cooperation of the members.

Gentlemen, we may now proceed to the discussion of the topic which has been assigned to us, the eight-hour day in the railway services. Three reports have been submitted to the Congress on this subject, the reports being as follows : A report by Mr. L. Velani, Assistant General Manager of the Italian State Railways, covering the countries of Switzerland, Italy, Spain and Portugal; secondly, a report by Mr. Soulez, Chief Engineer of the Northern Railway of France, covering all countries except the British Empire, America, Switzerland, Italy, Spain and Portugal; and, thirdly, a report by Mr. William Clower, Assistant to the General Manager of the London Midland & Scottish Railway, England, covering America and the British Empire. Mr. William Clower has very kindly prepared a special report for the Section of these three reports, having been appointed special reporter of this Section. I need not offer any special introduction of Mr. Clower; I think his work is well known to all the members of this Section. I have very great pleasure indeed in introducing to the 4th section our special reporter for the day, Mr. William Clower. (*Applause.*)

Gentlemen, as the secretary has already explained in French, the special report on the eight-hour day was not prepared in time to permit a French translation to be made prior to this meeting. In order to expedite matters as much as possible this morning and because a large number of the members present this morning have indicated that the English language will be satisfactory to them, Mr. Clower, our special reporter, will proceed with his reading in English. At the close of each report he will present a brief summary of that report, and that summary will be translated into French; in this way it is hoped that at least the principal points and the summary may be presented to you both in English and in French. If that is satisfactory — and I hear no objections — we will ask Mr. Clower to proceed at once with his special report.

*Mr. Santini, Principal Secretary* (in French). — The French text of Mr. Clower's special report is not yet available. If, however, the members of the Section so desire, I will endeavour to give a translation while the report is being read out. This will perhaps take rather a long time, but I am quite prepared to do it if you wish it, unless you prefer to wait until to-morrow. If the report is not printed by to-morrow I will give you a verbal translation of it. (*Agreed.*)

We will content ourselves to-day, therefore, with the reading of Mr. Clower's report in English. (*Renewed assent.*)

I may perhaps be able to give you a rapid summary of the principal points. In any case we will do the best we can under the circumstances. (*Applause.*)

*Mr. Clower, Special Reporter.* — Mr. President and Gentlemen, in one respect at any rate I have to identify myself with you, Sir; that is in the matter



of ignorance of the French language. I have always deeply regretted that ignorance, but I think my humiliation has reached its deepest depth this morning, and I certainly regret any confusion that may arise as a result.

At the outset of this report I desire to point out that the subject in its relation to the countries covered by the reports of my two colleagues possesses a special interest by reason of the comparative freedom which exists in those countries in the operation of the eight-hour day and the considerable variety of methods in force. In America and the British Empire the agreements between the Railways and the Trade Unions are precise in their provisions, and the measure of elasticity is restricted. The reports of my two colleagues are pregnant with such comprehensive and valuable information on so many important phases that they repay a careful study. Any summary, however concise, may omit salient features, as it can only marshal outstanding points of the reports, and that more or less superficially.

Early reference may conveniently be made to an aspect of the question which affects all railways, namely, the international arrangements contemplated by the Washington Convention. The Treaty of Peace signed at Versailles on the 28 June 1919, had the effect of bringing the question prominently to the notice of the various Governments and the public at large. That treaty, after stating that : « An improvement of the conditions of labour is urgently required, as, for example, by the regulation of the hours of work, including the establishment of a maximum working day and week », established, for the promotion of such objects, a permanent organisation comprising a General Labour Conference and an International Labour Bureau.

The General Labour Conference had to prepare proposals either in the form of « a recommendation to be submitted to the members of the League of Nations for consideration with a view to effect being given to it by national legislation or otherwise », or in the form of « a draft International Convention for ratification by the members ». The task of the General Labour Conference is defined in article 427 of the treaty, which recommended as of special and urgent importance « the adoption of an eight-hour day or a forty-eight-hour week as the standard to be aimed at where it has not already been obtained ».

The general conditions of labour were examined at Washington in the year 1919, when the undermentioned Convention was agreed : « The working hours of persons employed in any public or private industrial undertaking or in any branch thereof, other than an undertaking in which only members of the same family are employed shall not exceed eight in the day, and forty-eight in the week, with the exception hereinafter provided for. » To make the Convention effective in any country ratification by legislation is necessary, but such ratification is not yet universal.

Now, turning from the general to the particular, it will, no doubt, be the wish of the Congress, and has already been expressed by the President, that each paper should be dealt with separately, and, therefore, a separate summary of each of the three papers is submitted. The first report that is summarised is that presented by Mr. Velani on Switzerland, Italy, Spain and Portugal. In the introduction Mr. Velani points out the importance attached to the attainment of the eight-hour day by the mass of workers generally, including railway employees. It is borne out by the fact that



it has been one of the most strongly pressed demands of international Trade Unionism. It has only been possible for the reporter to obtain information from ten Administrations in the countries dealt with, but these include the principal railways in those countries, except Portugal, where the only reply is from the Portuguese Railway Company, which is the second important railway in that country.

It was during the period 1919-1921 that the eight-hour day was adopted almost generally. In taking that step, Italy went much further than the other three countries by adopting as the standard eight hours on duty as opposed to eight hours' effective work. The result of this step was so disastrous that it was found necessary in 1921 drastically to modify the arrangement.

The paper then deals with the development of the regulations relating to working hours on the Italian railways. A valuable and illuminating table showing the progressive development of the regulations as to working hours on the railways, concerned with the safety of traffic operations from the year 1900, is given in appendix II of Mr. Velani's report, and I invite the special attention of the gentlemen present to that appendix, for from that appendix it will be seen that immediately prior to 1919 the average hours of work varied from 8 to 14 per day, according to category, that the maximum length of the working day was 17 hours, that the maximum amount of work in working hours was 12 or 14 hours (in exceptional cases 13 or 14), and that the minimum period of rest ranged from 7 to 10 hours, according to grade. For employees whose work was continuous the maximum working hours were 10 per day. The controlling and administrative staffs in offices worked, generally speaking, 7 hours per day.

A day of rest was allowed every 15 days, except in the case of office staff, who were granted every alternate Sunday off duty.

In 1919 the Government conceded to certain categories of railway employees the eight-hour day and a weekly day of rest. The other classes of staff, comprising approximately 21 % of the whole, worked 9, 10 or 11 hours per day, in accordance with the nature of the work performed. As a result of subsequent agreements with the Trade Unions, the eight-hour day, that is, 8 hours on duty, was extended to employees of all categories without distinction. The actual regulations adopted for the several categories are set out in detail in the report. Mr. Velani submits observations upon the regulations for the several categories, and these are to the following effect : Footplate and train staff. The effect of these concessions was exceedingly serious. The output of the footplate and train staff in general did not amount, on the average, to more than 4 hours' effective work on the trains. The reduction in effective working time would have been less serious if the engines could have been pooled, that is to say, if any set of men might take out any locomotive, but neither the staff nor the equipment were prepared for so drastic a change. The footplate and train staff unit per 1 000 train-miles was increased by 86 %. A considerable number of employees had to be taken on to meet the situation. This appreciably reduced the standard of skill, and, therefore, brought down the output of the staff. This increase of staff was quite out of proportion to the benefit to the staff by the reduction of hours. Then, dealing with the station and shed staff, these difficulties were experienced in a lesser degree in regard to all other sections of



staff. The eight-hour day was rigorously applied, regardless of the nature of the work, so that the principle followed was not eight hours' work but eight hours on the company's premises. The ratio of the number of station staff per 1 000 miles increased by 67 % and at engine sheds by 97 %. Mr. Velani illustrates in detail what the other general effects of the changes were. One point of interest is that, arising out of the first application of the eight-hour day, it ceased to be illegal for traffic and train staff to leave work after completing the number of working hours fixed by law. This relaxation gave rise to great inconvenience in the running of trains during 1920-1921. In 1922 a reaction against the tendencies of the years 1919-1921 set in, and the methods of applying the eight-hour day were revised. The very important principle was adopted that the eight-hour day should be 8 hours of actual work and not merely presence on duty. New regulations were issued under which it was provided that in the case of an employee being merely present on duty a suitable coefficient (of two-thirds) was applied in calculating the equivalent length of actual work performed. The amendment, or repeal, of certain other restrictions produced a considerable improvement in running, and a more economic use of staff, which fell to an increase per 1 000 train-miles of 23 % over the pre-war figures. With regard to the permanent way staff, there are two sections : those guarding the line and those who are engaged on permanent way maintenance. The more serious effect of applying the eight-hour day to this category was modified by an arrangement for making watchmen responsible for inspecting five or six miles of line daily and leaving unattended unimportant level crossings where visibility just-

tified it. As to the workshop and stores staff, the hours of these categories were reduced from an average of 10 to an average of 8 hours per day.

Then comparisons are made between the various States' working hours, that is, Switzerland, Spain and Portugal. Mr. Velani recites the rules in force with regard to the several categories of the staff in the three other countries prior to the adoption of the eight-hour day, and his comments thereon may briefly be stated as follows :

*a) SWITZERLAND.* — No great change has arisen in consequence of the application of the eight-hour day, as the rules adopted are very flexible, and the former regulations were fairly generous. Workshop and stores staff formerly worked 9 hours;

*b) SPAIN.* — There were no rules for determining the working hours prior to the introduction of the eight-hour day. The length of the day's work for footplate staff was 9 hours, for workshop and stores staff 9 hours, and for others it varied from 10 to 12 hours. Employees were given a day off every 15 days. The eight-hour day was first applied to the locomotive staff and later extended to other categories, but hours of mere presence on duty are counted at half rate. The rules respecting the eight-hour day were drawn up in a sufficiently flexible manner to avoid any serious adverse effect upon the industry;

*c) PORTUGAL.* — Before the application of the eight-hour day regulations were in force which controlled the working hours, so that they could not exceed 11 or 12 per day on the average, although the maximum might be 18. On the adoption of the eight-hour day power to extend the hours at unimportant stations to 9, 10



or 11 was retained. Reference should be made to tables Nos. 1, 2, 3 and 4 included in Mr. Velani's report, wherein are given details of the hours and conditions decided upon for the various sections of staff, and which set forth the position very thoroughly.

The report then proceeds to consider the general rules now in force in the various countries, for the purpose of making a comparison. Generally summarised, the main effect is briefly as follows. I have had tabled a somewhat concise summary of the arrangements in the various countries concerned, but as these are largely matters of detail and the figures appear in the reports themselves, may I suggest that the gentlemen present will make themselves acquainted through that source with the details?

The new arrangements for securing that the 8 hours should consist of effective work resulted in an increase in actual work on the Italian State Railways, as follows: Footplate staff, from 19 hours 38 minutes per week to 26 hours 34 minutes, or an increase of 35 % in effective work. The train staff rose from 25 hours 33 minutes per week to 33 hours 34 minutes, or an increase of 33 %. Mr. Velani estimates that the change to 8 hours on the basis of the conditions outlined leads to a reduced output of 20 % and an increase of 25 % of staff. The figures given are: Switzerland, no appreciable increase; Italy, an increase of 23 %; Spain, an increase of 25 % on the Northern Railway and 30 % on the two other important systems; Portugal, an increase of 100 %.

The report next sets out a note on the methods of applying the eight-hour day. For the reasons already referred to, it was eventually recognised that the principle of 8 hours ought to be maintained,

but that the 8 hours should be hours of actual work and not merely of presence on duty. Reference is made to the views in this sense expressed by men eminent in the railway world, and in political parties of all shades of opinion, and in the field of medicine.

The following is the summary in which Mr. Velani sets out a number of suggestions at which he has arrived as a result of the investigations and experience gained in the countries upon which he reports. The points emphasised are as follows:

1) The length of working hours should be fixed in accordance with the nature, intensity and continuity of work performed, making a clear distinction between effective work and mere presence on duty;

2) If the work is intermittent, or merely consists of being present on duty, the hours on duty should be reckoned as only partial work — two-thirds being a fair value;

3) It is advisable to fix the number of effective working hours by periods of more than one week, for example, per month or, preferably, per year;

4) a) The minimum period of rest for staff at small stations should be fixed at 10 hours, or 9 when the employee lives at least 550 yards from his place of employment;

b) For footplate and train staff rest periods when lodging out should be only as long as is strictly necessary to obtain meals and recover from their exertions — minimum, 8 hours; and when at home considerably more — not in any case less than 12 hours;

5) The limit of hours of work should be fixed at 14 hours for footplate staff and 15 hours for train staff, to be reduced to 12 and 13 respectively when the



preceding hours of effective work have extended beyond 8 hours;

6) The number of periodical days of rest should be fixed at 52, not including the ordinary period of rest between turns of duty;

7) Night work should be carried out either solely or partially between midnight and 5 a. m., and not more than six consecutive nights should be worked or more than 12 nights on duty out of four weeks. Female gate keepers should be exempt from night duty.

The President. — The Principal Secretary will now give the Section a translation into French of Mr. Clower's summary of Mr. Velani's report.

(The Secretary translated the summary into French.)

The President. — Mr. Clower will now continue his work as special reporter and will submit to the Section his summary of the report prepared by Mr. Soulez.

Mr. Clower. — Mr. President and Gentlemen, to continue, Mr. Soulez opens his paper with a discussion of the former regulations and the adoption of the eight-hour day in the countries upon which he has concentrated, and the paper opens with a reference to the Washington Convention as to the eight-hour day, and to the Geneva Convention relating to the weekly rest, and explains the action taken thereon by the several countries. I dealt somewhat exhaustively with this question at the outset as it affects the whole of the Railway Companies and therefore I will not repeat what Mr. Soulez has been good enough to set out in this report.

The paper then discusses the former practices in operation on the various railways as to daily hours of duty and rest periods, and explains the variations made

in those practices since. The very full details given in this section of the report are interesting, and the following points emerge as to the earlier customs in one or other of the countries concerned. The daily periods of work ranged from 9 to 13 hours; the maximum work in one day was 16 hours; the rest period might be as low as 7 hours or as high as 16; the number of rest days ranged from 28 to 52 per annum. The very considerable increase in staff necessitated by the reduced hours is elaborated and the resultant reduction in output ratio and a maximum number of consecutive night duty turns.

Then the report gives an exhaustive analysis of the present regulations respecting the eight-hour day. The two main sections of staff are dealt with separately, namely, first the mobile staff of the traffic and locomotive departments, and, secondly, the stationary staff, and the analysis relates to the following points. The brief notes on each item summarise Mr. Soulez's main points with reference to the mobile section of staff. There are variations affecting stationary staff, some of which are material and will be specially mentioned :

1) The first heading is the basic *period for calculating average daily work*. — This varies considerably. In certain countries the week is the basis; in France it is 10 days, whilst in other countries it is 2, 3, 4 or 6 weeks;

2) *Limits of working day*. — Where the length of a day is fixed, that is the period between commencing and finishing work, it ranges from a minimum of 12 hours to a maximum of 24 hours;

3) *The maximum duration of daily work* is referred to, which ranges from 9 to 16 hours;

4) *The duration and frequency of*



*periodical rests* average 36 hours — 6 to 20 days;

5) *The duration of daily rests.* — Usually the fixed interval separating two consecutive working periods is governed by the fact as to whether or not a man's home is near to his work. The period varies from 6 to 14 hours;

6) On the subject of the *length of journeys, night work*, the following definite limits are imposed, in one country or another, on the extent of night work: 15 nights per month applies to Belgium. The night work in two weeks must not exceed the hours of day work. That applies in Poland, Japan and Roumania. An employee may not work more than three consecutive nights;

7) *Allowances granted to certain staff in connection with the preparation and disposal of engines, etc.* — These vary according to the nature of the operations to be performed, and numerous examples are cited. An unusual feature obtaining in one or two countries is that, if an interval occurs at a man's home station between his arrival and departure, such time is deducted from the period of actual work, and a similar arrangement applies at other home stations if the interval exceeds 1 1/2 hours;

8) *The arrangements as to hours of duty in railway shops* are also summarised. Interesting figures are given, showing that on railways in France and Japan the inclusive hours worked by engine crews on a rotation system are on the average 7 hours 20 minutes for drivers and firemen, and 7 hours 30 minutes for train staffs.

Two points of interest as to stationary staff are dealt with:

1) Dealing with the basic period for calculating average daily work, Mr. Soulez gives the following customs as oper-

ating in the various countries: the average for a week, 10 consecutive days, a month or a year. Fourteen consecutive days at 90 to 114 hours, according to the category of the personnel;

2) Mr. Soulez explains that on certain railways employees whose work is of an intermittent character are dealt with quite differently from those whose duties are continuous. In some cases the ordinary limit of hours is extended; in others only half the period of attendance counts as actual work; in others the periods of inaction count as actual work up to one-quarter of their duration. Mr. Soulez expresses the views set out by Mr. Velani in his paper on the same subjects. Mr. Soulez explains that the conditions in railway workshops are similar to those in industrial shops, the hours generally being eight per day. The paper points out that certain classes of employees are outside the general regulations and details a number of exceptional arrangements under which the non-observance of the limitation of standard hours is permissible to the Company and compulsory on the staff. A useful summary of the regulations as to the conditions of employment on the German railways is given in Mr. Soulez's report.

The following is an abridged summary of the main conclusions set forth in the report of Mr. Soulez:

1) The regulations adopted by the different railways are very divergent, both as to basic principles and as to the method of their application;

2) In Western Europe the regulations are characterised by condensation of the work into as short a daily period as possible by a more or less equal distribution of work between consecutive days, and by the reduction, as far as possible, of variations from the average period laid



down in the regulations. These characteristics are the result of a desire to approximate railway conditions to those obtaining in large industrial undertakings;

3) In Central and Eastern Europe and in the Far East there has not been the same effort to approximate the conditions obtaining in industry in general, and there is a less equal distribution of work between different working days. In order to grant longer daily rests there is no hesitation to resort to a longer average working day than is found on the railways of Western Europe.

The following are certain of the detailed summaries divided into three sections :

1) Summary applicable to the whole staff;

2) Summary relating exclusively to mobile staff — drivers, firemen, guards, etc.;

3) Summary relating exclusively to stationary staff.

The principal points emphasised are as follows :

1) The average length of actual work should be calculated over as long a period as possible, preferably over the whole year;

2) A distinction should be drawn between actual work and light or intermittent work.

In those two respects Mr. Soulez is in entire agreement with Mr. Velani;

3) With a view to retain the maximum of elasticity in the regulations, and to avoid difficulties in the application and interpretation of such regulations, they should be as simple as possible;

4) The execution of the work of one section should be entrusted to the staff of another section, for example, in small

shunting yards the use of loco-tractors (internal combustion) driven by employees of the yard is less expensive than the shunting engine which, to carry out a few hours' work daily, would have to be detached from a neighbouring depot;

5) When employees of one section are not constantly or fully occupied they should be used on work normally belonging to another section;

6) Accessory work, such as preparation of engines and their return to the shed, should be allotted, as far as possible, to employees other than those who actually drive the engine;

7) Signal cabins with a wide range of action should be adopted; and in offices the work should be concentrated;

8) Operations not of a technical nature (cleaning, handling of goods, etc.) may with advantage be done by contract, thus avoiding dispersion of the energies of the technical staff.

The President. — Mr. Clower will now present, as special reporter, his summary of the paper prepared by himself dealing with the eight-hour day in America and the British Empire. This is the third and concluding report on our general subject of the eight-hour day.

Mr. Clower. — Mr. President and Gentlemen, this paper is confined to a description of the application of the eight-hour day principle to manual workers engaged, in one form or another, in the operation of traffic, these being the classes of railwaymen most affected by the eight-hour day. As regards the clerical staff, they are only affected in a small degree, because, whilst their hours of duty may be as low as 38, they seldom exceed 48 per week. The working hours and the method of rostering turns of duty of the workshop staff are governed, generally speaking, by the arrangements

in force in non-railway workshops and factories in which similar grades of men are engaged. The hours in operation today in all workshops are, in the main, 47 per week, divided into five long turns and one short turn on Saturdays. In Great Britain the weekly hours were 54 prior to 1919, when the 47-hour week was adopted. In most of the countries to which the report refers the question of the standard eight-hour day is no longer an acute problem, because, justly or unjustly, by one means or another, the heavy financial burden of the adoption of the principle has been imposed upon the Railway Companies. In certain of the Colonies of the British Empire the financial obligations of the eight-hour day proved to be so onerous that it was necessary to revert to the longer hours. Prior to the institution of a universal eight-hour day the general practice was to give eight-hour turns to staff engaged in continuous, responsible and arduous duties, for example, shunters in busy marshalling yards, signalmen in important main line cabins, etc. It is pointed out in the report that the cost of the adoption of the eight-hour day has been enormous, and that the wholesale reduction of hours of the traffic operating grades has not been and cannot be counterbalanced by any material increase in output.

The report gives a resume of the history of the general movement in the several countries for the establishment of the eight-hour day principle and refers to certain phases concerning the actual application of that principle to grades engaged in the manipulation of traffic. The principal points brought under review include: 1) History of movement; 2) principle of eight hours' effective work; 3) the distribution of the 48-hour week; 4) the extension of the ros-

tered working day beyond 8 hours; 5) the spreading of eight hours' work over, say, 10 or 12 hours; 6) alteration of rostered turns of duty to meet emergencies in working, etc.; 7) night work.

A brief summary of these seven points is as follows:

1) *History of movement.* — a) Great Britain and Ireland: The former standard hours were 8, 9, 11 or 12 per day. In 1914 about 46 % of the signalmen and 48 % of the shunters enjoyed the eight-hour day. The eight-hour day had not been granted to any extent to other operating grades. In 1914 general demands were put forward by the employees' Trade Unions, one of which was the application of the eight-hour day to all grades. These demands were, by mutual consent, held in abeyance when the Great War broke out. As from the 4 February 1919, the Government, which still retained control of the railways, granted the eight-hour day in the following terms: « The principle of the eight hours' day for railwaymen is to be given effect to as from the 1 February 1919, on the basis of the existing conditions of service, and, where it is not found practicable to reduce the working hours to eight, overtime will be paid for all time worked after the expiration of eight working hours »; b) In America prior to 1917 the eight-hour day was granted to certain small sections of employees, details of which are not available. On the 1 January 1917, by an Act of Congress, the general eight-hour day was sanctioned for train men, shunters, cartage and road transport staff. By the 1 October 1918, practically all employees enjoyed the shorter standard day; c) The British Dominions and Colonies: The eight-hour day principle has been adopted in varying degrees on the



railways in all British Dominions and Colonies, other than India and South Australia, but the variations in method of application are very wide. In South Africa it has been found necessary to abandon the general eight-hour day and revert to the former arrangements of daily hours varying from 8 to 9 in the case of engine drivers and firemen and 8 to 12 in the case of grades other than train men and ticket collectors;

2) *The principle of eight hours' effective work.* — Certain classes of railway employees are engaged on work which is continuous in character and their turns of eight hours must, of necessity, be continuous also. Although such men cannot be relieved for meals at fixed periods, the general arrangement in all countries is for them to partake of food at convenient times, and it is recognised that about 20 minutes is taken for the purpose. In adopting the universal 48-hour week on the railways in Great Britain, it was agreed that train men, shunters and signalmen should work six turns of equal length, without a fixed time for meals, which are taken as opportunity offers. Certain other grades also work and partake of food under the same conditions. The weekly hours of other grades are based on 48 hours actually on duty. The requests from grades whose services are not required continuously to be brought within the arrangement of an « overall » eight-hour day have, generally speaking, been refused;

3) *The distribution of the 48-hour week.* — Six turns of 8 hours each or five long and one short turn. Attention is drawn in the report to the general desire for a half-day holiday in the week, and it is considered desirable to adopt this arrangement wherever practicable, that is, to allow the staff to work five days of 8 1/2 hours each and one day

of 5 1/2 hours. It is recognised that it is not convenient to do this in the case of certain grades of employees, for example, enginemén. The question is one to be determined on each railway according to circumstances;

4) *The extension of the rostered working day beyond 8 hours.* — The report examines the question under two heads, namely: a) the rostering of daily or weekly hours beyond 8 or 48 respectively; b) the extension of actual working hours beyond the rosters. As regards a) there is, generally speaking, in Great Britain no absolute limit placed either by statute or by agreement on the period a man may be rostered to work, although in certain countries maximum hours are fixed. In America the law prescribes 16 hours as the maximum. In Canada and South Africa the limit is 12, in Western Australia 10, and in New South Wales 9. On the Commonwealth (Trans-Australian) Railways there is no general limit. Turning to the second point, it is pointed out that the extension of the day's actual work beyond the rostered hours is an expedient which under special circumstances it is necessary to adopt in almost every country, and this is ordinarily accepted by the employees;

5) *The spreading of eight hours' work over, say, 10 or 12 hours.* — In Great Britain this practice was largely resorted to in former years, but as the result of representations on behalf of the men the system was entirely abolished under the National Settlement of 1920. In 1921 the Scottish Railway Companies appealed to the National Wages Board (which is the ultimate Court for dealing voluntarily with railway labour disputes in Great Britain) for relief from certain burdens imposed by the new standard conditions, and they asked, *inter alia*, for

permission to re-introduce the « spread over » system. The Board conceded to them authority to apply a « spread over » up to 10 and 12 hours in certain cases. This authority was subsequently extended to the railways in England and Wales; but in view of the fact that the authority was limited in its application the resultant economies have been meagre. The « spread over » arrangement is in operation in certain other countries dealt with in this report and details are given therein;

6) *Alteration of rostered hours to meet emergencies of working, etc.* — The following is briefly the position in regard to this subject: In Great Britain there is no provision in the agreements that rostered hours must be rigidly adhered to. The Trade Unions have, however, made the claim that no alteration should be made or that, if made, compensation should follow. The Railway Companies must meet the daily changing demands of their customers, and strict adherence to rostered workings at all times is impracticable. Emergencies are met, as far as possible, by rostering a certain number of enginemen and guards at large depots as « spare ». Fuller details are included in the report. In America, generally speaking, turns may be altered to meet exigencies without penalty. In Canada the same general regulation applies as in the case of America;

7) *Dealing with night hours*, generally speaking no difference is made between day and night in the periods of rostered turns of duty or in actual working hours.

The following general remarks may be made in regard to existing conditions in Great Britain: The present conditions laid down in the National Agreements between the Railway Companies and the Trade Unions provide for a standard

eight-hour day and 48-hour week, and include a guarantee of a week's wages to operating staff for a week of 48 hours (excluding Sunday). The conditions afford, on the one hand, elasticity to work such overtime and Sunday duty as is necessary to operate the railways efficiently; and, on the other hand, safeguards in the shape of enhanced pay for such added work, minimum hours of rest, etc., to prevent the abuse of such elasticity. Legislation on the lines of the Washington Convention for the adoption of the eight-hour day would cut right across these agreements. It will be noted that the present arrangements as to the eight-hour day are more rigid in certain respects in Great Britain and Ireland than in any other country. The eight-hour day in Great Britain means eight hours on duty, excluding rostered meal times only, whether the employee is engaged in actual work all the time or not. It will be seen from the reports of my two colleagues that on the Continent of Europe this is not so in all cases. In Great Britain all time worked over eight hours (or eight and a half in the case of grades working five long turns and one short turn per week) has to be paid for at an enhanced rate, and the 48 hour-week is exclusive of turns commencing between midnight Saturday and midnight Sunday.

The general conclusions and suggestions made by my two colleagues as the result of the experience already gained are both valuable and interesting, but it may be pointed out that certain of the suggestions could not be adopted in Great Britain, having regard to the present National Agreements made by the Railway Companies on behalf of the Government with the railwaymen's Trade Unions. It is evident from a study of the large amount of material collected in



the three reports that, apart altogether from the question of ratification of the Washington and Geneva Conventions, no country has actually adopted on its railways the full terms of these Conventions, and it is equally evident that to do so would be harmful to the best interests and the wellbeing of both the railways and their employees.

**The President.** — Having completed the presentation of the formal reports, the next step in our order of procedure will be to take the reports up for general discussion. It is now half past 11 o'clock, and, in view of the difficulty under which the Section has been labouring this morning in not having before us translations of the three reports which have been presented, it occurs to the President that possibly we can do no better than to adjourn at this point for the luncheon period, and in the meantime the members should secure copies of the reports, either in French or in English, and acquaint themselves somewhat more fully with their contents before resuming our session this afternoon. I understand that the three reports have now been printed both in French and in English, and that copies may be secured at room No. 7 on the ground floor below and if that procedure approves itself to the Section my suggestion is that we adjourn at this point in order that you may secure copies of the reports either in French or in English, as suits your desires, and acquaint yourselves with their contents before resuming our session.

I understand that Mr. Soulez has some further remarks to make to the Section, and it may be that Mr. Velani will wish to do so also, and possibly Mr. Clower will also wish to supplement his report by some personal remarks. We will

therefore open our session this afternoon by giving them the floor at the beginning, and then we will hear any suggestions or any remarks that any member of the Section would care to make as to procedure or recommendations. (*Agreed.*)

**Mr. Soulez, Reporter** (in French). — I should like to make some remarks, and as they are general remarks I should prefer to make them now.

**The President.** — Gentlemen, if there is no objection Mr. Soulez would like to address a few general remarks to the Section.

**Mr. Soulez** (in French). — I am grateful to you, Sir, for allowing me to speak at this point in the proceedings.

Gentlemen, I was requested by the Permanent Commission to prepare a report on the question of the eight-hour day, dealing with the situation in all countries except America, the British Empire, Switzerland, Italy, Spain and Portugal.

Before giving an account of my work in this connection, I wish to thank the Permanent Commission for the assistance they rendered me by sending a questionnaire to the various railway administrations and companies.

It was not possible in my report to note all the information supplied in answer to this questionnaire, and I had to limit myself to setting out the regulations in force in the various countries.

The special reporter has pointed out that I based my report on the relevant international documents and in particular on the Washington and Geneva Conventions.

I would by no means suggest that these two conventions have served as a basis for the preparation of the labour regulations in force in other countries, for

the greater portion of such regulations were in existence prior to the date of the Washington and Geneva agreements. As, however, we are regarding the matter from the international point of view, it appeared to me desirable to base my report on the discussions in which both the employers' and the employees' associations took part.

We have no intention of limiting the scope of our investigations, however, and my object in making this statement is precisely the fact that in the Washington Convention we rediscover the majority of the ideas which dictated the labour regulations in force on a great number of railways.

Thus, in article 2 it is specified most distinctly that these provisions may be applied to all public and private undertakings or to their subsidiaries, whatever their nature, with the exception of such as employ only members of a single family, and that the working hours shall not exceed eight in the day or forty-eight in the week, with certain exceptions.

Article 3 deals with cases in which the limit of working hours may be exceeded.

Article 5 lays down the method of calculating working hours.

Article 6 is particularly important, defining the distinction between presence and work. My fellow reporters and I have all arrived at the same conclusion on this point.

This article also deals with the question of special work.

It appeared to me useful to refer to these Conventions and to earlier regulations, and to estimate as nearly as possible the resulting increase in expenditure, which seems to vary between 30 and 40 % for different countries.

I have also classified the personnel in different categories : train staffs, drivers

and firemen, station staff, permanent way workshop staff, etc. I have reviewed the characteristics of the regulations in force, and finally I have examined the conditions under which exceptions might be justified, the intervention of the personnel in the application of labour regulations and the procedure to be adopted for settling difficulties which arise between employers and employees.

You will find at the end of my report a summary which I endeavoured to prepare without indicating any limitation and without formulating any recommendations, being well aware that a limit which was acceptable in a given country might not be so in another.

I have, therefore, confined myself to generalities.

Finally, with the help of the information at my disposal, I have endeavoured to discover means of rendering the application of the eight-hour day less burdensome without making undue demands on the personnel.

In any case, however, the conclusions of my report are intended to be regarded as observations, not recommendations.

I will now take the points in the summary :

1. — It is most important that the average length of actual work should be calculated over as long a period as possible, preferably over the whole year, so that the railway may be in a position, without employing an excessively large staff, to deal with sudden rushes of traffic, and to make up for working time lost for various reasons, particularly as a result of inclement weather, the varying length of days and nights, and unforeseen occurrences or accidents.

2. — A distinction should be drawn between actual work and merely light or intermittent work, in order that the effective output of employees may ap-



proximate as nearly as possible to the limit laid down by the regulations.

3. — Whether in the case of actual work or intermittent work, it is desirable, without however, exceeding the permissible limits, to lay down sufficiently wide limits, variable according to the nature of the work and to the housing conditions of the employees concerned.

I have referred in this point to the question of lodgings. It is easier to arrange for a longer period of presence on duty when an employee lives near to the station.

4. — Any limitation as regards the intervals between periodical rests leads to a limitation of the duration of such rests, thus making it impossible to modify the regulations to suit the personal convenience of different employees.

5. — With a view to retaining the maximum of elasticity in the regulations necessary for the proper conduct of the railway service, and in order to avoid possible difficulties in the application and interpretation of such regulations, it is desirable that they should be as simple as possible.

We are sometimes accused of confused thinking. Even when we have to do with people who are able to understand complicated questions, it is still desirable that rules should be as simple as possible.

If labour regulations provide the procedure to be followed for settling difficulties arising between employers and employees regarding the application or interpretation of such regulations, it is desirable that this procedure should be expeditious and entail the intervention of the least possible number of intermediaries.

6. — If the most effective possible utilisation of the staff is to be obtained, it

is essential that all employees should be fully aware of the conditions and difficulties obtaining in other sections of the service, and to secure this it is necessary that there should be a sufficient degree of interpenetration between the different sections.

In the case of certain important centres it may indeed be desirable to appoint control officials whose duty it is to co-ordinate the activities of the various branches of the service (ordering and running of scheduled and auxiliary trains, arrangement of the work of engine crews and train staffs; withdrawal of engines and staff after their normal period of work, etc.).

It is evident, in fact, that once the line personnel realise fully the conditions and organisation of the line service, their output will tend to improve, engines will be returned to the depot without delay, and wastage of time will cease.

This is the idea which I have endeavoured to convey. I would add that in certain localities this evil, namely the loss of time resulting from overlapping of different branches of the service, is so great that control officials have actually been appointed.

7. — It is frequently possible to meet the requirements of the service with a minimum of staff by not hesitating to entrust the execution of the work of one section to the staff of another section, although this may not be in accordance with the normal scheme of work.

For example, in shunting yards of small or average size, the use of locomotors (internal combustion), driven by employees of the yard, is a less expensive substitute for a shunting engine which, to carry out a few hours' work daily, would have to be detached from a neighbouring depot.

In paragraph 8 it is stated that it is

sometimes possible, when the personnel of a particular branch of the service is not constantly and entirely occupied, to use them for work usually done by the personnel of another branch of the service.

9. — In the case of mobile staff, even more than in that of stationary staff, the limits of the working day influence the effective output of such employees.

10. — In order to avoid unproductive journeys, whether for employees or for engines, it is necessary to observe the utmost elasticity in the arrangement of turns of service. In particular, to allow for the frequent disproportion between the volume of traffic running in the two opposite directions, it is desirable to adopt the triangular arrangement of turns of service. If this is to be possible, however, it is necessary not to impose too strict a limit on the number of days during which an employee may be absent from the place of residence nor on the minimum duration of rests taken away from the place of residence.

11. — Accessory work, such as the preparation of engines and their return to the engine shed, represents an important part of the work of engine crews.

It is often desirable to allot this accessory work to employees other than those who actually drive the engine.

12. — In order to avoid the necessity for keeping an unproductive staff in reserve in case of emergency, and to obtain a more efficient utilisation of the staff as a whole, it is necessary that the regular timetable should comprise the maximum number of trains to be run, thus limiting the number of special trains to the actual daily variations in traffic.

13. — The punctuality of train movements is an indispensable factor in the effective utilisation of the personnel and in the reduction of useless effort.

Finally, there are the points dealing

with station, engine shed and permanent way employees.

14. — The reduction of effective output is most apparent in those branches of the service where the work is dependent on the train service or on the requirements of customers.

It is possible to improve this output by concentrating the maximum number of operations in as small a number of posts as possible. The use of cabins with a wide range of action, or the concentration of work in offices, are among the means whereby output may be partially increased.

Operations which are not of a technical nature (cleaning, handling of goods, etc.) may with advantage be done by contract thus avoiding too great a dispersion of the energies of the technical staff.

15. — Every improvement in equipment (multiplication of telephonic apparatus to avoid useless waiting and movement of the staff of different branches of the service, provision of tractors for dealing with goods and parcels, use of electric motors and electric lighting) helps to improve the output of the staff.

16. — In order to avoid the necessity of increasing the number of employees engaged (especially in night work), so as to be prepared for any possible breakdown of apparatus or disturbance in the normal working of traffic, it is very desirable to arrange that at any rate part of the staff should live within a certain distance of the place of work. It is accordingly desirable that dwellings should be provided, either free or in return for a rent proportionate to the means of the employees concerned.

17. — In order to be in a position to cope with seasonal rushes of traffic without being compelled to engage temporary and inexperienced staff, it is desirable that the regulations should be sufficiently elastic as regards hours of overtime.



18. — As regards temporary staff, it is desirable that they should be subject to regulations which, while not exceeding a certain maximum period of work, allow of sufficiently wide limits to enable the temporary employees to execute completely the duties of the employees whom they replace.

It is further obvious that, with a view to avoiding loss of time in proceeding to and from the place of work, temporary employees should as far as possible be domiciled in the same district as the employees whom they replace.

19. — For the conveyance of employees between the assembly point and the place of work (and, to a certain extent, for the inspection of the permanent way), the use of hand trolleys reduces the amount of walking and thus increases the amount of actual work done by the employees.

The President. — We thank you for your supplementary remarks, Mr. Soulez,

and I may state, for the benefit of those members of the Section who may not have been able to follow you in French, that you have been presenting to us in a large measure the summary of your report. In order to save time we will not have an English translation of Mr. Soulez's remarks at the present time, but I would suggest to those members who have been unable to follow him in the French language that they should refer to pages 58 and 61 of the English translation, and in that way they will obtain a very definite idea of Mr. Soulez's remarks.

We may now, Gentlemen, follow the suggestion made a few moments ago by the President, and, if it is agreeable to the members of the 4th Section, we will adjourn for the luncheon recess, meeting again in this room this afternoon at 2.30 p. m.

— The meeting was adjourned at 12.10 p. m.

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Meeting held on 23 June 1925 (afternoon).

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Dr. J. H. PARMELEE, PRESIDENT, IN THE CHAIR.

— The meeting opened at 2.40 p. m.

The President. — First of all I have one or two announcements to make. It is with great pleasure that the President announces the appointment of a fourth vice-president to the 4th Section namely, Dr. C. C. Wang, of the Chinese Ministry of Communications.

As to the proceedings of the session, a number of enquiries were made as to whether it would be possible to secure copies of the special report presented to us this morning by Mr. William Clower. I am asked to state to the members of the Section that a resume of Mr. Clower's

report will be printed in the *Official daily Journal of the Congress* and will appear in the edition of the report of the Congress tomorrow.

Gentlemen, those members of the 4th Section who were present this morning will recall that at our morning session we had a special report from Mr. Clower covering the three reports presented to the Section on the subject of the eight-hour day, and that, following the presentation of the special report by Mr. Clower, some supplementary remarks were made by Mr. Soulez, the author of one of the reports. It was suggested by the President that in opening

the discussion this afternoon it might be possible to hear further supplementary remarks from Mr. Velani, one of the other reporters, and also from Mr. Clower himself, who presented the report relating to America and the British Empire.

The President at this time wishes to make one or two remarks simply to start the discussion, in the hope that the discussion of this subject this afternoon will be free and complete. One thing which has been emphasised to us by the presentation of the reports this morning was the vital importance of the subject of the eight-hour day in the railway service. Another thing which must have been borne in upon us was the tremendous amount of detail covered by the subject. I have placed very briefly on paper three questions or subjects which seem to be general throughout the three reports presented to us this morning, reserving the right, if I may, at a later point in the discussion, to add some further and supplementary remarks relating particularly to the United States. The three questions to which I refer are as follows :

1) the distinction between eight hours on duty and eight hours of presence;

2) if the eight-hour day is to be effected economically and socially it must consist of eight hours of actual work, that is, eight hours on duty;

3) more work per hour must be performed by employees during a shorter day than is performed during a longer day if the economic effect of the shorter day is not to be burdensome. It is in connection with this third question that the President hopes at a later session to present some information and statistics with respect to the experience of the railways in the United States.

Gentlemen, with that very brief intro-

duction we may proceed to the discussion from the floor of the reports presented to the 4th Section this morning. Let me again remind the members of the Section that, while it is desired that the discussion shall be free and complete, yet the time is very short for the particular subject in hand, and it is therefore earnestly requested that each member shall be as clear and as concise as possible in his presentation and that he shall restrict himself to general rather than detailed remarks. Let me also repeat the request made this morning, that each member upon rising shall give his name, number and the Administration which he represents as clearly as possible for the record. In rising, Gentlemen, it is requested that you speak from your places but speak as clearly as possible, in order that our secretaries may secure a complete and accurate record.

Gentlemen, we had the pleasure this morning of having some supplementary remarks from Mr. Soulez. Mr. Velani is not at this moment in the room, and we might perhaps hear from him later. I wish to ask Mr. Clower if he cares to add anything to the remarks made this morning, by way of supplementing the general principles which may not have been covered at the morning session.

Mr. Clower. — I have nothing to add at present.

The President. — In that case the discussion is open to the members of the Section.

Mr. Tcheou-Wei, Chinese State Railways (in French). — I would like to make a few remarks to supplement the information given by Mr. Soulez in his report.

He states that *China* has not yet admitted the principle of the eight-hour



day, and only contemplates, as a first step, a ten-hour day in the case of certain industries.

I am grateful to my colleague for having referred to so far distant a country as my own, and I am sure the data I am about to give will interest him.

There is in China an official regulation, dated 29 March 1923, article 6 of which relates to the question of the eight-hour day for certain categories of employees.

Further, a parliamentary bill on the question was introduced by the Ministry in April 1925, though it has not yet become law.

Mr. Hill, South African Railways. — As representing, I suppose, a comparatively small railway compared to some of the huge Corporations which are represented here, I should not have pressed myself forward at this stage if you had not called upon me, but I will do my best to explain to the meeting the present position with us, which is one of tremendous interest to our country at any rate. In South Africa we have perhaps not had so bitter an experience with regard to the eight-hour day as I gather from the reports of some of the delegates that the Old Country is experiencing. We are a very young country and we started with a very high appreciation of our public duty — I can say that of our staff. The result has been that our various difficulties, complex as they have been, have been discussed with the staff in a very friendly spirit. There has been a spirit of mutual help and confidence, and that has enabled us to get round some of these troubles better than other countries. In 1918 we plunged into the universal eight-hour day, and I think our experience was very similar then to that of other countries. I do not think any

responsible railwayman believed that the absolute universal eight-hour day was justified as applied to railway conditions in South Africa. I think it is the duty of this Congress, if I may say so, in respect to the position in which we all find ourselves, to consider whether in our opinion the eight-hour day is justified as universally applying to railway services. I think an opinion on that fundamental aspect of the case, coming from a Congress representing the railway controlling men of the world, will be of very great value. Our experience on the points which the President has raised, the eight hours' duty or eight hours' presence, we were in the position that it was completely impossible to give eight hours' duty in a very large percentage of our staff. We are scattered over 4 000 miles of country; the stations are sometimes 25 miles apart, and the traffic is sometimes very light, and often we have a man on who would be able to do all the necessary work of the line for the 12 or even 24 hours of the day, although he would not be on duty all day. We simply applied the eight-hour day irrespective of whether they worked that time, but we could not get eight hours' work even in 24 hours' service. We have very concentrated work in some centres but I should think, from my experience of English working, that the working of eight hours in London would be more of a strain than 24 hours in our own country. In our more concentrated places the work is strenuous and we have always had the eight-hour day. The other question is that of getting more work out of the staff. There again you come back to the same point. As far as we are concerned, our staff work hard; they give us good value for the money we pay them, but you cannot get the

work out of them because the work is not there to be done. We worked under those conditions and the result was that it plunged us into financial chaos. We gradually built up a debt of £4 000 000 and the Government was forced — and it had the courage to do it — in the interests of the country to go back, very reluctantly, of course, from one point of view, to the point where we had been previously. The present position is that a new Government has come into power and the matter has been reopened. Of course there are very many demands and the demand came in this case for the universal eight-hour day. Our Government took the line that they could not concede the principle of the universal eight-hour day because it was not suited to the circumstances of the country and it was not justified on its merits, but they have agreed to consider the whole position in regard to hours from the point of view of the absolute merits of the case in each instance. They have appointed two Committees and they are working at present; one is dealing with the locomotive and running side and the other is dealing with the general staff. On each of those Committees the staff are represented, and they are at present enquiring into the position not from the point of view — when I left South Africa, at any rate — of reinstituting a universal eight-hour day, which we do not think is practicable, but from the point of view of the different grades to which we should apply different conditions. So that from the point of view which I represent the most vital point is not so much the details as the main principle. That is what I should like to see debated here, as to whether these gentlemen, in spite of the position they are in, do think that the universal eight-hour day is justified on its merits. Broadly speaking, I may say,

so far as we are concerned, that the drivers and firemen, the engine staff, work 9 hours, that is to say, 9 hours is their nominal day, but they have a system of guarantees and minima which I will not go into. As far as they are concerned, I may say that when we had the eight-hour day we could not get them to work to it normally and we had to pay them overtime. I think that the eight-hour day demand is absolutely used as a basis for fixing wages; it is not the fixing of a principle at all. When you look at it from that angle it is a mockery; really they want it as a basis of pay. With regard to the present artisans, they are on the 48-hour week and inspectors and people of that sort, wherever the work is continuous and arduous, are on the eight-hour day. The bulk of the staff are on a nominal 54-hour week; that includes mealtimes. The clerks at local stations and what we call station foremen are nominally on a 10-hour day, but they are allowed to go off before the day is finished. The guard's basis is 10 hours per day. I think that more or less gives an idea of the position so far as South Africa is concerned, for what it is worth. We have another complication, that we have about 47 000 Europeans and of course the matter is always discussed from their point of view. On the other hand, we have about 44 000 natives, and I may say that our natives are not in any way in an advanced state of education. They are practically aboriginals and they work when they must do it, and they do it generally, but they are in a very low scale of civilisation, and to apply the eight-hour day to them would be absurd. Their system of life is that they live in their locations in their own territories, their own kraals, as we call them, and whenever they want money for any pur-



pose to get a new wife or a couple of cows or something of that sort they come and work for some months, and then for some months after that they will go back to the kraals and they will not come back again until the necessity sends them. As a matter of fact, their working hours would be very few per week during their lifetime.

I think those are the main points covering our position. I think that first of all we should discuss the main principle, if it is competent for me to make the suggestion, that is, whether the eight-hour day is justified. If as railway men we think the eight-hour day is fully justified under all the circumstances, let us say so — but I do not. If we do not think so, let us also say so. The point of principle is the most important point before us.

The President. — May I ask you one question: Do I understand you to say that at one time the eight-hour day was universal throughout your railway system and that later it was withdrawn?

Mr. Hill. — The position is that the universal eight-hour day was withdrawn some four years ago, and at the present moment I think approximately half our staff are on the 48-hour week. We have had demands for a reinstitution of the general 48-hour week. We have two Committees enquiring into the whole matter in detail from one end of the service to the other, and on each Committee the staff are represented. Our Government has not accepted the principle of the universal 48-hour week or eight-hour day, and I cannot express an opinion as to what they will do, but I do not think that a young developing country like South Africa, where we have all to work hard, and you have to consider the population generally, could adopt an eight-hour day,

because it would be likely to retard the progress to the country and not do it any good.

The President. — Gentlemen, the meeting is open for further discussion from the floor. The members will recall that one question has been emphatically stated to us this afternoon. It may be termed the question of the economic effect of the eight-hour day, which Mr. Clower definitely did not deal with in his report; he made the statement specifically that he would not attempt to discuss that phase. Mr. Hill and others have pointed out that that is really the fundamental principle underlying the eight-hour day — is it or is it not feasible as an economic principle? — and the Section might well turn its attention to that phase of the subject, as well as to some of the other phases. The Chair will be glad to hear any comments or remarks or suggestions on that particular point. Perhaps we might hear from our vice-president, Mr. Eberhardt, whether he has anything to say on the subject on behalf of Poland.

Mr. Eberhardt, Polish State Railways (in French). — On the Polish Railways we distinguish between an eight-hour period of actual work and mere presence at the place of work. The former is given the coefficient 1; the second counts for  $1/3$ . Within these limits coefficients have been decided upon for each class of work.

In Poland the eight-hour day was introduced by virtue of a law passed at the end of 1919, *i. e.*, before the Washington Conference, but the railways were not obliged to apply the law literally. The Minister of Railways conferred with his colleague, the Minister of Labour, as regards the application of the law regarding the eight-hour day, and I can say that in practice the results have been satisfac-

tory.. The railway personnel, which was previously very large, has diminished gradually, agreement between the railway administration and the railwaymen's associations as to the « coefficients » of work having been reached without difficulty.

I may add that Poland has not yet ratified the Washington Convention; she was, however, represented at the conference.

Dr. Wang, Chinese State Railways. — Mr. President and Colleagues, as the President has well put before the Section, the labour question is an economic question, because, as we all know, we cannot and we should not consume more than we can produce. There is a limit to how much we should work to produce enough in one year — at least enough, if not more than we consume. I think that is common sense all over the world. The President has put very clearly his three points. I need not emphasise the first two points, because I think they are well understood. It must be the hours that are worked and not hours when they are simply present and inactive. I would emphasise more the third question, that is to say, the speed of the work, or, if you prefer it, the intensity of the work. There is a difference of course, between the eight hours you are at work at a high speed and the eight hours when you are at work only leisurely. I think that point has not up to the present been emphasised by those authorities who deal with the question of hours, because it stands to reason that the primary purpose should be not to have too much wear and tear upon the human machine, just in the same way as we want to take care of the other element of production. I think all of us perfectly appreciate that eight hours of hard work will produce more fatigue

to a man than if he does ten hours of slower work, just as ten miles can be covered by the famous runner Nurmi in much less time than it can be covered by other people; and the man who covers it in the shortest time is far more likely to feel the wear and tear than others who walk the distance leisurely. So I think in regard to labour matters we have to pay attention not only to the question of how long they work but also to the question of how they are working. That is what we have to pay more attention to from the economic point of view. In my country we have been very careful in studying the question. We have not adopted the eight-hour day, but we are attempting to limit the hours in such a way so that the labourers may not have too much wear and tear. The second question I wish to call attention to is, that the work has to be adjusted with due regard to the different categories of labour as well as the local conditions at different places. I will speak further upon this point. The categories, that is, the different classes of labour, as our able reporter, Mr. Clower, said this morning, only apply, for instance, to the manual labour of the men at the stations. Even with them I think we have to use discretion, because, as my colleague from the South African Railways has said, our railways cover long distances. For instance, the railway I was in charge of covers about 1 000 miles from one end to the other. At one end we have ten or twenty degrees below zero and at the other end we have mild weather even in winter. We cannot treat our labour without consideration of those differences, because it stands to reason that a man cannot stand four or five hours in a place where it is twenty degrees below zero while he could stand six or seven hours in the place where the



climate is mild. The same thing is true with regard to the station staff. Take a station hand at a busy terminus or a shunting station, if he works eight hours and is hard at it he does a hard day's work; on the other hand, as our South African delegate says, in the country places, where there are only a few trains they have very little to do and it is not hard work at all to put in as much as nine or ten hours a day. So that there we have not only the category of the labour but the different conditions of the country which will have to be emphasised. Regarding the question of the condition of labour, it must first of all be emphasised that China is a very big country and that the climatic conditions of the north and south are vastly different. That is what has led the Government up to now to be very careful about the question of hours, and that is why we have organized a special Bureau dealing with this question. We want to get advice from all the engineers of other railways, but I think from the point of view of principle as well as for our own interest, we have to be very careful to define what is meant by this eight-hour day and what is to be produced in the eight-hour day, rather than simply to say it is eight hours. I think, as railway operators, we have to be very careful about the class of labour and the conditions at different places before we can lay down fast rules.

Mr. Hill. — I should like to add a word to what I have already said. I merely wish to explain that the system which my colleague here advocates is one which we actually follow, that is, that all the hours of the various grades at the shops and elsewhere were determined by detailed inspection, as far as we are concerned, at each centre. We appointed a Com-

mittee that visited all the centres and a very big percentage of the stations, and they actually inspected on the spot the work in detail, and they fixed the hours according to the intensity and arduousness and the general strain of the work under the conditions as they actually existed. We accepted the principle that the eight-hour day was the proper one to adopt where the work was continuous and intensive; then where the work was to some extent intermittent, as in the case of a good many wagon and carriage examiners, for instance, and some shunters, and various odd grades at intermediate places, there was fixed a 54-hour week. The maximum that any man should be on duty was fixed at 12.

Mr. Eberhardt (in French). — One of my colleagues asks me if Poland has ratified the Washington Convention. I can only repeat what I said a few moments ago : Poland was represented at the Washington Conference, but she has not yet ratified the Convention.

We can say that as regards the application of the eight-hour day, we anticipated the Convention.

Mr. Barlow, Ministry of Labour, Great Britain. — Mr. President and Gentlemen, I do not wish to express any opinion, but there are one or two points on which information would be of great value to people in this country. One point in particular is the experience of those countries that have tried to put into operation the eight-hour day but have been compelled, or found it necessary, to abandon it. I understand that Poland tried it but found it necessary to go back upon it, and according to the representative, Mr. Eberhardt, there is not at present any serious demand among the work-people for a return to the eight-hour day. It would be of great interest to know

what the experience of Czecho-Slovakia was. Czecho-Slovakia is one of the few Central European countries, which has ratified the Washington Convention, which did pass a law effectively enforcing it and which did try to put that law into operation. Although the law, as I understand, has not been repealed, yet our information is that its working has been to a large extent modified. It would be of interest to know, if there is a representative of Czecho-Slovakia here, what their difficulties have been in trying to apply the Washington Convention to the railways, and whether there is any dissatisfaction on the part of labour at the changes which have been made. Similarly in regard to France the question of the 48-hour week is very prominent in French politics at the present moment and is an important plank in the platform of the Socialist Party. It would be of great interest to know what is the attitude of labour on the French railways with regard to the 48-hour week, and whether there is an insistent demand for it, and whether those who are responsible for the administration of the French railways think that they can apply to those railways the principles of the Washington Convention. I am only asking, Sir, for information.

Mr. Soulez, *Reporter* (in French). — Details regarding the adoption of the eight-hour day in Czecho-Slovakia are to be found in my report, where the subject is referred to several times.

As regards the forty-eight hour week, the French railways do not apply it literally. In the case of permanent way employees, for example, the period is calculated over 90 days. Properly speaking, therefore, the 48-hour week is not in force on the French railways.

I will lend Mr. Barlow papers contain-

ing the data supplied to me on these points.

Mr. P. O. S. Silva, Portuguese State Railways (in French). — I would like to mention one interesting question. Is the eight-hour day applicable to the railway industry in the same way in which it can be applied to other industries? From the historical point of view we are forced to recognise that the eight-hour day represents a victory for the working-class in the sphere of labour. There are, however, certain principles which are unfavourable to the rigorous application of the law to the railway industry: Mr. Soulez has pointed this out in his report.

Mr. Soulez (in French). — That is so.

Mr. P. O. S. Silva (in French). — This is a very important question. We are concerned with the welfare of the railways in the various countries, and we must, as far as possible, meet the demands of the workmen if they are legitimate.

We are in principle in favour of the eight-hour day, but I repeat that it is for the Congress to consider whether the eight-hour day is or is not susceptible of application to the railways. As regards the principle at issue, we should both maintain and develop it in order that the victory achieved by the workmen may prove an advantage to the railway industry generally.

Mr. Keogh, Great Southern Railways, Ireland. — Mr. President and Gentlemen, I represent a country which is typical of those parts of the world where rail-borne traffic is exceedingly light. There are very few sections of the Irish Railways carrying anything approaching a dense traffic. The country is an agri-



cultural country and the traffic on the railways consists merely of the needs of an agricultural population and the produce of agriculture. Ireland is peculiar in regard to the principle of the eight-hour day in this way, that the agreement which had been arrived at in Great Britain was extended to the Irish Railways by the Government during the period of control during the war, possibly without full consideration of the circumstances which existed in that country. Those circumstances are totally different from the circumstances in Great Britain. The necessity for shortening the hours of labour is not in any degree the same, and this unfortunate condition has been reached, that we in Ireland are subjected to conditions which may or may not be proper and necessary in Great Britain but which certainly are not justified in our country.

The principle which has been adopted in South Africa, which we have heard from Mr. Hill, is one which possibly would meet our circumstances exceedingly well, and I think it would be of interest to many of us — certainly it would be of interest to me — to know whether, in bringing about the conditions that exist in South Africa, the administration acted on its own motion, or whether the provision to treat labour as strenuous and less strenuous and intermittent, and so on, was agreed between the administration and the men, or whether the determination as to whether a particular class of work was or was not strenuous rested exclusively with the administration. I think certainly it would be of very great interest to us in our country if we had a little information as to how the conditions were brought about in South Africa and in those other countries which have departed from the strict principle of the eight-hour day.

The President. — Mr. Hill, I think you have already given us some information which Mr. Keogh has asked for, as to how you arrived at the hours to be applied to the different classes and in the different localities, but if there is anything you care to add to your statement, in view of this specific question, we should be glad to hear it. You recall that Mr. Keogh asked whether the arrangement made in South Africa was arrived at exclusively by the Government or by agreement with the employees or their representatives.

Mr. Hill. — Mr. President and Gentlemen, the issue is not quite so clear as that. To a great extent the existing hours came about as the result of a long series of negotiations and discussions. There was a Commission which sat in 1912, I think, which consisted of elected members of the staff and nominated members of the public. They overhauled the hours to the extent of dealing with all complaints that were submitted to them, so that when that Commission sat, and its decision was unanimous, the position was then that the hours had been accepted by the staff as reasonable although not bound by legislation. Subsequently the conditions of labour were overhauled by a Committee of officers representing the administration, which consisted of a mechanical officer and myself only. That Committee discussed with the staff and listened to what the staff had to say, and decided for or against the staff. Fortunately the staff accepted the findings of the Committee. The present position is that we have now appointed a Committee which is sitting at the moment, on which the elected members of our Conciliation Board have nominated two of their number to sit. This Committee consists of two members who are mem-

bers of the Conciliation Board and two nominated officers, and we are going to leave it to equal numbers — we do not believe in an independent Chairman — to decide, and we hope this Committee will come to some recommendation on this matter. The staff have the fullest opportunity of making representations now and always will have so far as we are concerned. That is all I can say on the matter.

Mr. James Mason, New Zealand Government. — Mr. President and Gentlemen, New Zealand, the country which I have the honour to represent at this distinguished Congress, is, like South Africa, a sparsely populated country, a country which cannot be considered to have a dense traffic. There are considerable distances between many of the stations, and the work generally at many of those stations is not heavy. For some time prior to 1924 the staff generally had been working a 44-hour week, but were paid overtime for any hours worked in excess of eight on any particular day. It appears to me there has been some little confusion here today as between the eight-hour day and the 48-hour week. Of course there is a considerable difference between the two. In the case of the eight-hour day there would, of course, be overtime on any work over the eight hours, and in the case of the 48-hour week overtime would not be incurred until 48 hours had been worked. As the result of some trouble experienced with the staff of our railways in 1924, the Government set up a special Board of Inquiry to deal with the question of wages and conditions. That Board consisted of the Arbitration Court of the country, that is, a judge, a representative of the employers of the Dominion and a representative of the

Labour Unions of the Dominion plus a representative of the Railway Department and a representative of the railwaymen. I had the honour of representing the Department on that Board. Two advocates represented the different sides before that Tribunal, one the Department and the other the Union, and they stated the case very fully from their respective points of view. After that the Board sat *in camera*, and the whole question was very fully debated — I may state that this Arbitration Court deals with all labour questions throughout New Zealand — and at the conclusion of this very keen debate the decision of the Board, certainly it was a majority decision, was as stated by Mr. Clower in his report presented here this morning, that the hours of the staff engaged in the maintenance of the permanent way and those employed in the traffic and stores Department should be raised from 44 to 48 hours per week. That was the considered opinion of that Board, which, as I have already said, adjudicates in all questions of labour throughout the country, and it was the opinion of that Board after having had very full information placed before it. I might state that many of the Labour Unions in New Zealand, or at least the members of the Labour Unions, enjoy a 44-hour week. That is in cases of different trades where it is considered that the work is of a sufficiently arduous and constant nature to keep them employed, but on some railways, particularly in young countries such as South Africa and New Zealand, the work is not of a continuous nature and could not by any stretch of imagination be so regarded. Now although this Board has increased the hours from 44 to 48 per week for the branches mentioned by Mr. Clower in his report, and as stated by myself, it did not fix a



48-hour week for members of the staff who are not working arduously and whose work is not intensive. For instance, we have porters who are stationed at distant stations, and who work the tablets in connection with the running of the trains. Those men do not work a 48-hour week but they work a greater number of hours where the work is not regarded as arduous. It will be seen, therefore, that the Board recognised it would not be sound economically to give a 48-hour week to all employees, that in some cases it would not be warranted, and the Board certainly on the finding which it arrived at considered that a 44-hour week was not economically sound.

Sir Evelyn Cecil, Southern Railway, Great Britain. — Was it unanimous?

Mr. James Mason. — It was not unanimous; it was a majority report. With regard to the eight-hour day, prior to this trouble which arose in 1924 the Department was paying overtime on anything in excess of eight hours. Under this finding of the Board it does not do so; it pays overtime, to those people mentioned by Mr. Clower, only when the men have worked over 48 hours per week. I submit, Mr. President and Gentlemen, that under conditions such as I have mentioned an eight-hour day would not be warranted, that it would not be economically sound. As I understand Mr. Hill, that is practically his contention. Mr. Hill goes further; he states that they have a Board in South Africa which is enquiring into hours generally, and that where the conditions vary a different schedule of hours would be arranged. That may be a very good idea. I have not had time to consider it at length, but I shall be very interested indeed to know the result of the enquiries of that Board. In

our country the climatic conditions do not vary very greatly. The men work practically the same hours in either the towns or the country, so that possibly the position is somewhat different to that stated by Mr. Hill with regard to South Africa.

I thought it advisable to make a few remarks on this subject, so that the gathering as a whole could consider the matter from every aspect. In the thickly populated countries, such as you have in Europe and America, of course the conditions are vastly different, and probably a great number of your men are working arduously and continuously. Then of course the question of hours of work per day becomes more acute than it is in a country such as New Zealand. In New Zealand we certainly found it was too costly to work the men a 44-hour week and that it was not warranted in the circumstances, and when the men demanded higher pay the Department refused their demand, with the result that they went out on strike, and, after they resumed work, negotiations were entered into between the Department and the Union, but without result. The Government thereupon appointed this Board, which, as I have mentioned, was comprised of the Arbitration Court of the country, with a representative of the Department and a representative of the Union, and it was presided over by a judge, a man specially skilled in matters of that kind.

Sir Evelyn Cecil. — Has that decision been accepted by all concerned?

Mr. James Mason. — Yes, the Union has accepted the finding of the Board.

The President. — Gentlemen, the 4th Section is, I think, approaching that stage of its work in connection with the subject of the eight-hour day when it might consider the question of a resolution, or

a series of resolutions perhaps, to be presented on that subject to the Congress as a whole. The President is desirous, however, that no member of the Section shall fail to have the opportunity, before we arrive at that stage, of participating as fully and as freely as he wishes in the preliminary discussion, and we shall therefore be glad to hear at this time from any other members of the Section who may have remarks to offer.

Mr. Hales, North Western Railway, British India. — Mr. President, I represent the North Western Railway of Lahore in India. You mentioned just now that we are approaching the position when we may be able to put forward a resolution to the Congress; you also told us, I think, that we might get some information and statistics as to the experience in the United States with regard to the question that more work per hour must be demanded. Might we have those statistics before us before any resolution is put?

The President. — Mr. Hales, the President regrets that the time available during the luncheon recess was not sufficient to prepare that material, and it was his hope to present that at the beginning of the morning session to-morrow. I hardly think that that material or those facts would have any direct bearing on the question of a resolution.

Mr. Hales. — I think it would affect the resolution, Sir. There are others also who have suggested it to me amongst those present.

The President. — The thought in the mind of the President, Gentlemen, was merely that one or more resolutions might be submitted this afternoon, not to be acted on today but merely for the consideration of the members of the Section

overnight, and that those resolutions would then be brought before the 4th Section at its session to-morrow morning for further and complete discussion.

Col. J. T. Loree, Delaware & Hudson Railroad, United States of America. — Mr. President and Gentlemen, as representing the Delaware & Hudson Railroad of the United States, in connection with the question raised by Mr. Hales, while I have not the statistics personally, I should like to make a few remarks on the situation in the United States. The so-called adoption of the principle of the eight-hour day was and is purely a political measure and has not been considered as an economic question on the Railways except by the Railway Managers. While in the efforts to pass an eight-hour law, arguments were presented as to the laboriousness of the duties, the great rank and file of the railway workers were not interested from that point of view but were actuated largely by the desire to increase the number of employees and the means of securing additional payment. The Federal laws in the United States do not limit the service to eight hours but to sixteen within any twenty-four hours in train service and in the dispatching and telegraphic service connected with train movements, to nine hours. Certain States, under the factory laws, require one day's rest in seven in the works. It is still a matter of consideration whether the railway business in the United States can be conducted on an eight-hour day, the terminals being situated in many cases, more than one hundred miles from one another, do not permit in the main of a service within such period. Therefore, the percentage of overtime, *i. e.*, the hours beyond the so-called standard day (eight hours), is in nearly all cases, extremely high and this imposes



a considerable penalty upon the railroads of the United States. The expense, were it otherwise possible to change these terminals, would be so terrific that in very many cases it would not be even contemplated. The attention of the Managers has rather been turned to the continuity of employment. The Managers feel that it is not possible to have a fixed eight-hour day. There are at present two experiments being conducted, one by the Detroit, Toledo and Ironton Railroad Company, in which a man is allowed to work only two-hundred-eight (208) hours in the month and then is allowed to perform no more service in the calendar month; the other, upon the line which I have the honour to represent. We have a sliding scale of eight to ten hours per day, depending upon the conditions of the service, the business to be done and the financial condition. That, however, has only to do with the works and permanent way staff, platelayers and so on, but has very successfully been worked for the last two years, and we hope for the same arrangement of hours of service on this line with the engine and train staffs.

**The President.** — If there is no further discussion, we will proceed to the consideration of a resolution on the subject of the eight-hour day in the railway service, which the 4th Section may present to the Congress. The Right Hon. Sir Evelyn Cecil, who has very graciously stayed with us throughout the whole of the session to-day, has a suggestion to make with respect to a resolution on this subject.

**Sir Evelyn Cecil.** — Mr. President and Gentlemen, I would merely propose a resolution as one for amendment or consideration after having listened to the interesting speeches which have been

delivered to-day. So far as I can gather the views of the delegates, it seems to me to some extent at any rate that the conditions in different countries are decidedly varied, and that it would be difficult to lay down a rigid rule about an eight-hour day in all countries. We have heard interesting speeches from various countries, from France, Great Britain and her Colonies, and China and Portugal and the United States, and in all those countries it seems to me that the conditions do to some extent vary, partly because of the climatic conditions and partly, perhaps, because of the conditions of the Trade Unions or the conditions that have been made in agreement with them. It therefore becomes very difficult, I think, for us who represent all nations, or nearly all nations, to say that we can rigidly adhere to such proposals as were made at Washington and Geneva, that there should be a definite rigid rule for an eight-hour day applicable to railways in all countries. It may be that delegates will take a different view from that which I am expressing, but, so far as opinion has been voiced at present, I would suggest that it might largely be represented by some such resolution as the one which I have framed here: "That Section IV is of opinion, after full statements by the representatives of the different countries, that a rigid eight-hour day as laid down in the Washington Convention is not practicable but can only be adopted with limitations in accordance with varying local conditions and requirements."

**The President.** — Gentlemen, I feel sure that I can express the thanks of the 4th Section to Sir Evelyn for his suggested resolution, and if it approves itself to the members of the Section I would suggest that we adjourn at this time until

9.30 tomorrow morning, and that in the meantime the members of the Section should give their thoughtful consideration to this resolution which has been read and be prepared in the morning to discuss it in full, to propose alternative or modified resolutions and in every way be prepared to complete the consideration of this question by noon tomorrow. If that is agreeable to the members of the Section, we will consider ourselves adjourned for the day.

**Dr. Wang.** — I just want to make a request that the secretaries will have this resolution printed in English and French, so that we can read it. I think reading it would allow us to grasp it better.

**The President.** — We are not sure that we can succeed in doing so, because the staff is limited and we have much to do tonight, but we will certainly try.

— The meeting was adjourned at 4.50 p. m.

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**Meeting held on 24 June 1925 (morning).**

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**Dr. J. H. PARMELEE, PRESIDENT, IN THE CHAIR.**

— The meeting opened at 9.30 a. m.

**The President.** — Gentlemen of the 4th Section, we have before us this morning at our programme the continuation of the discussion of the topic considered at our sessions yesterday, namely the eight-hour day. The official programme calls for the completion of the discussion of this subject at the morning session to-day. Tomorrow the discussion will be taken up with the subject of railway statistics, to which will be devoted both the morning and the afternoon sessions. On Friday the two sessions, morning and afternoon, will be given over to a consideration of the subject of joint stations and lines, in which discussion we shall be joined by the 3rd Section.

Before proceeding to the general discussion, some interest was displayed yesterday in the statement made by the President that he would submit to the 4th Section some remarks regarding the operation of the eight-hour day in the United States, with particular reference to the economic effects. I have prepared

a brief statement on that subject and will present it at the opening of the session this morning. As supplementary to that part of the report of Mr. Clower dealing with the United States, he has kindly consented to the presentation of a brief statement by me.

In discussing the eight-hour day in the United States a clear distinction must be made between the train and the engine forces on the one hand and the shop and maintenance of way and clerical forces on the other hand. With respect to the train and engine forces, two statements may be made: first, their hours cannot be rigidly fixed but must be regulated by the necessities of train operation; secondly, they are usually paid by the mile rather than by the hour, with extra compensation if their average speed per hour falls below an agreed minimum. Thus they are compensated on a modified piece work basis. Prior to 1917 the train and engine crews in the freight or goods service were usually paid on the basis of 100 miles per day, 10 miles per hour; that is, their normal day was



10 hours. Crews in the passenger service have always been paid on a basis of less than 8 hours per day, usually under 100 miles per day, at a speed of 20 miles or more per hour, with a normal day, therefore, of 5 hours or less. In 1916 the train and engine employees threatened to strike unless granted an eight-hour day, and the threat was sufficient to bring about a Federal law, effective 1 January 1917, making 8 hours rather than 10 hours the basis of a day's work. That law did not fix the day at 8 hours but made 8 hours the basis of work and of pay. This required the railways to speed up their freight trains from 10 miles per hour to 12 1/2 miles per hour, or to pay overtime after 8 hours. While some freight trains have been so speeded up, the location of terminals and the density of traffic have made it impracticable to do so in all cases, and the law has increased the cost of train operation in the neighbourhood of 100 000 000 dollars per year. In brief, the employees secured under this law what they really sought, that is, not so much a reduction in hours as an increase in wages. For the employees other than train and engine forces, that is, the shop forces, the maintenance of way forces and the clerical forces, the eight-hour day was made effective by the Government in 1918, soon after the railways were placed under Government control for the purposes of the war. At the same time wages were increased more than enough to offset the reduction in hours, except in the case of the higher paid members of the railway staffs. Following the war, the principle of the eight-hour day in shops, in maintenance of way work and in the clerical offices, was generally recognised, either by agreement between managements and employees or by decisions rendered by the

Railroad Labour Board, which was created by law in 1920. At the same time the employees have retained a considerable proportion of the wage increases made during the war.

Turning to the economic effects, the effect of the institution of the eight-hour day on American railways may be summarised by comparing certain statistics for the year 1916 with corresponding statistics for the year 1924. The year 1916, it will be recalled, was the final year before the effective date of the law above referred to relating to train and engine forces; the year 1924 is the latest complete year of railway operation. A comparison of these two years is therefore significant for the purposes of this summary. The comparison is here presented from two points of view: first that of the employees and, secondly, that of the railway managers. From the employees' point of view, hours per week have been reduced from 60.6 hours in 1916 to 48.3 hours in 1924; that is virtually from 10 hours per day to 8 hours per day. The 48-hour week has been in effect realised, the average last year being 48.3 hours. Secondly, compensation per hour has increased 126 %, that is to say, it has more than doubled; thirdly, the annual compensation or earnings per employee have increased 81 %. In this connection it will be recalled that the cost of living in the United States has increased during the same period about 65 %. These averages apply to all railway employees and indicate a satisfactory situation from their point of view; with fewer hours of labour their total earnings per man have increased at a greater rate than the cost of living. From the point of view of railway managements, the number of employees on the pay roll increased at a slightly higher rate than the traffic

handled. From 1916 to 1924 the number of employees increased about 7 % and the freight and passenger traffic about 5 %; secondly, the larger traffic in 1924 was handled with a considerable reduction in hours, indicating that more traffic per hour was handled in 1924 than in 1916. This result was secured largely by increasing the size of engines and of cars and by loading trains and cars more heavily. Thirdly, although fewer hours were paid for in 1924 than in 1916, the rate per hour was 126 % greater in 1924 than in 1916, and the total amount paid in wages was nearly 100 % greater. In brief, while the railways in 1924 handled an increase of traffic with fewer hours of labour, those fewer hours cost them nearly twice as much as the greater number of hours in 1916.

I will now say a few words as to the prospects of the present situation. A serious problem in the United States is that relating to the stabilisation of railway labour, that is, the problem of supplying continuous and permanent employment to the greatest possible degree. The American railways are confronted with two difficulties in this connection. The first is climatic, due to the fact that in many sections, especially in the north, our severe winters make it impossible to carry on maintenance of way work during several months in the year. The second difficulty is the quick variation in freight and passenger traffic from month to month, which affects both the train forces and the forces in the repair shops. Our traffic in October is often twice as great as in February, and changes occur upwards and downwards with great rapidity. As to climatic difficulties little can be done, although some of our northern lines have recently experimented with track work in winter

time and have been able to spread that work more evenly throughout the year. As to traffic operations, there is only one effective remedy, which is to maintain a uniform force of employees and to vary their hours per day or per week in correspondence with the traffic. Thus the same men might work only 6 hours per day during certain months of the year, 8 hours during certain months and 10 hours during the remaining months, averaging 8 hours for the year as a whole. A sliding scale of hours has actually been adopted on a few railways but has been opposed by the Trade Unions wherever their strength in members is sufficient to make itself felt. The Unions sometimes agree to a 40-hour week made up of five days of 8 hours each. Seldom, if ever, do they agree to a shorter day than 8 hours, although in effect there is little difference between three days of 8 hours each and four days of 6 hours each.

Summarising very briefly :

I. — Since 1916 the eight-hour day has in a large degree been realised on the railways of the United States; generally speaking, overtime pay and higher rates are granted for all overtime over 8 hours;

II. — The result has been beneficial to the employees but has added very greatly to the cost of the railway operations;

III. — The problem of stabilising railway employment is made difficult by climatic variations, by variations in traffic from month to month and by the opposition of Trade Unions to a sliding scale of hours in repair shops.

**Dr. Wang.** — I think what has been said is a very instructive and illuminating account of the situation not only



with regard to the American railways but with regard to all the railways in the world, and I for one should like to see that paper reproduced in the minutes of the Conference, in order to be able to read it in the future.

Mr. Santini, *Principal Secretary* (in French). — As regards the printing of minutes in the *Daily Journal*, a limit is imposed of about 1 000 words per meeting. However, as the meeting has adopted Dr. Wang's suggestion, arrangements shall be made for it to be carried into effect.

The President. — Gentlemen, the 4th Section has before it for consideration this morning the resolution proposed by Sir Evelyn Cecil at the close of the afternoon session yesterday. He has made slight amendments and changes in his resolution as the result of suggestions made to him by the various members of the Section and as the result of his own consideration. I will ask the secretary to present this amended summary for the consideration of the Section at the present time.

Mr. Santini (in French). — « The 4th Section is of opinion, after the full statements of the representatives of the different countries, that the principle of a rigid eight-hour day as laid down in the Washington Convention is not practicable, owing to the varying local conditions and requirements, but that each case should be examined with due regard to the surrounding circumstances and taking into consideration the special character of the railway work to be executed. »

The President. — Gentlemen, this resolution is before you for consideration and for such action as you may wish to take. If any members of the Section

have comments to make or amendments or alternative resolutions to offer, the President will be glad to hear from them.

Mr. Soulez, *Reporter* (in French). — It would appear from the interesting discussion which took place yesterday that a strict and uniform application of the eight-hour day is impossible, in view of very varying local conditions, climatic considerations, etc. This is, moreover, the conclusion which the President has crystallized with admirable force and precision in the three following points :

I. — It is necessary to distinguish between effective work and mere presence;

II. — If the eight-hour day is adopted, the eight hours must be hours of effective work : this is essential;

III. — Employees must do more work in the same time. This is the idea enunciated by Sir Evelyn Cecil in another form in the text suggested by him yesterday and brought up again for consideration this morning with the agreement of the President.

In order to meet the definite suggestions put forward by delegates, and the leading ideas expressed by the President and Sir Evelyn Cecil, I venture to propose the following wordings :

« After having heard the remarks made by the representatives of the different countries, the 4th Section is of opinion that the railway industry, in view of the varying working conditions resulting from varying local conditions or other circumstances, does not lend itself to systematic limitation of the work to be required of each employee.

« In order that the effective work performed may be equivalent to eight hours' consecutive work, it is necessary for certain employees whose work is intermit-

tent to be on duty for more than eight hours per day. »

It is not sufficient, in fact, to increase the period of presence : the regulations must be such as to permit of an average of eight hours' effective work.

Finally, you will all agree that the President's third suggestion should stand :

« It is necessary to increase the individual output of work, particularly by the use of mechanical appliances and, in certain cases, by the adoption of the principle of specialised labour. » (*Applause.*)

**Mr. P. O. S. Silva** (in French). — At yesterday's meeting I endeavoured to show that the application of the law regarding the eight-hour day may be affected by very varying circumstances. I consider, therefore, that the wording proposed yesterday is preferable to that suggested this morning. Yesterday's version was as follows :

« The 4th Section is of opinion, after full statements by the representatives of the different countries, that a rigid eight-hour day as laid down in the Washington Convention is not practicable but can only be adopted with limitations in accordance with varying local conditions and requirements. »

**The President.** — It is my understanding that the word « principle » was introduced at the suggestion of one or more members of the Section, and in order that the discussion on that particular point should be as full as possible the President would be glad to entertain remarks from such members of the Section as feel that the word « principle » or the idea of the principle should be in the resolution. Mr. Mason, have you any suggestions to make on that score?

**Mr. James Mason.** — Mr. President and Gentlemen, it may have been partly the result of a suggestion I made to Sir Evelyn Cecil that the word « principle » was introduced into the resolution. I would have no objection to the omission of the word « principle ». Personally I think it makes very little difference whether it is included or otherwise. The main point, to my mind, is that the eight-hour day, that is to say, a rigid eight-hour day, is not practicable, particularly in the case of some of the railways in those far-flung countries where there is not a big population and where the traffic is not dense. But I have no objection to the omission of the word, so far as I am concerned, because I think it makes very little difference.

**Mr. Hill.** — I should like to support what our colleague from New Zealand has said. I think we should avoid referring to the principle of the eight-hour day in an antagonistic form, because we all accept the principle of the eight-hour day where circumstances justify it. The difficulty is in attempting to apply that principle rigidly to the conditions of a service for which it is utterly unsuited. We have talked about getting the eight hours' work in the eight-hour day. That is a good theory, but, so far as a good many countries which are represented here are concerned, it is a pure theory, because there is not the eight hours' work to be done, and to my mind to attempt to apply a principle or method of that sort under our conditions is burking the issue. The fact is that, so far as we are concerned, you cannot apply the eight-hour day rigidly. I think the resolution as drafted and amended, at any rate, without the word « principle », would cover the country. I represent and the



country that Mr. Mason represents, so I support that amendment.

**Sir Evelyn Cecil.** — I think if no other gentleman desires to speak I can say very shortly that I did introduce the word « principle » on the suggestion of Mr. Mason, and I thought some others supported him. I was ready to have the matter discussed. We have heard that Mr. Silva, Mr. Mason and Mr. Hill are now opposing, I understand, leaving in the word « principle ». For myself, I think the resolution really reads better without the words « the principle of », and I would propose that those three words should be omitted.

**Mr. de Ruffi de Pontevès, Ministry of Public Works, France (in French).** — The Washington Convention does not contain so strict a rule as the text proposed by Sir Evelyn Cecil might lead one to suppose.

Without waiting for ratification of the Convention, France embodied its provisions in the law of 1919 regarding the eight-hour day; this law contains a whole series of provisions which are sufficiently elastic to allow for the varying conditions which may be met with in industry and particularly in the railway industry. In particular, as regards employees whose work is essentially intermittent, it is provided that the limit of eight hours per day may be exceeded.

It would not, therefore, be correct to say that the Washington Convention strictly limits the period of presence to eight hours per day.

**Mr. Barlow.** — Mr. President, on that point there is a good deal of difference of opinion between the various Governments. In Great Britain we have always regarded with admiration the remarkable ingenuity with which the French Govern-

ment succeeded in interpreting the Washington Convention so as to be able to surmount many of the difficulties in a way which the less agile mind of the British Government did not discover. I think, if one takes the English text of that Convention and seeks to apply it to the railways, it would agree with the resolution which Sir Evelyn Cecil has put forward. I think it certainly is the view of those who have had to examine the Convention and to see how it would work when applied to British industry. But at any rate with regard to the railways this form is too rigid and does not admit of such elasticity as would enable the eight-hour day to be applied even if the principle were adopted. I will try to state it more clearly.

It certainly, I think, would be the official view in this country that the Washington Convention as it stands is too rigid to enable the eight-hour day to be applied to the British railways. I think we should not agree with the view put forward by the representative from France who has just spoken.

**Mr. Gufflet, Midi Railway, France (in French).** — Whatever opinion we may hold as to the terms of the Washington Convention and their interpretation, it appears to me that it is scarcely desirable to refer to the matter in the summary which the Section will be called upon to adopt.

It is hardly within our powers here to endeavour to interpret that Convention. If we state that it is or is not applicable to railways, we thereby commit ourselves to a definite interpretation. I think, therefore, that it will be preferable to confine ourselves to general terms. (*Signs of approval.*)

**Mr. Mereutza, Roumanian State Railways (in French).** — Although Rou-

mania has already ratified the Washington Convention, I do not think that reference should be made to the Convention in our resolution. Let us confine ourselves to general terms.

**Sir Evelyn Cecil.** — After what has been said by several delegates especially by Mr. Silva and Mr. Mereutza, I do not see myself why we should not leave out the words « as laid down in the Washington Convention », because, after all, the words « a rigid eight-hour day » speak for themselves and anybody can understand what they mean, and there is no need to construe them by mentioning the Washington Convention. The Washington Convention has been very much debated, but, after all, I do not think this Congress has specially to do with the interpretation of the Washington Convention; I would therefore propose that we should assent to the suggestion of the French representatives and others, and leave out the words « as laid down in the Washington Convention ».

**The President.** — As there seems to be no objection to the proposal made by Sir Evelyn Cecil, those words will be removed from the resolution. Are there any other suggestions to be offered?

**Mr. P. O. S. Silva** (in French). — I propose that we say that a rigid eight-hour day is not applicable, and can only be adopted with restrictions taking into account varying local conditions, etc., or any other considerations.

**Mr. Colson**, Ministry of Public Works, France (in French). — Let us use the phrase : « avec les modalités d'application » (« applied according to circumstances »).

**Mr. Santini**, *Principal Secretary* (in

French). — A revised wording will be submitted to you.

**Mr. Colens**, Ministry of Railways, Belgium (in French). — I do not think it would be reasonable at so important a Congress to avoid expressing an opinion on the point of principle. I should therefore like to suggest that the text should contain a sentence to the effect that the 4th Section approves the principle of the limitation of working hours.

**Mr. Colson** (in French). — That is already clearly indicated in the text.

**The President.** — Gentlemen, the Chair has no desire whatever to limit the discussion this morning, but our time is drawing rapidly to a close. We have three drafts or texts of resolutions before us which we must vote upon, and I would make the suggestion that, unless there are important modifications or considerations to be presented to the Section, at this point we should proceed to a definite division on these resolutions.

The secretary makes what appears to the Chair an excellent suggestion : in order that the Section may have before it for consideration and final decision these three resolutions proposed respectively by Sir Evelyn Cecil, Mr. Soulez and Mr. Silva, the session will be suspended for ten minutes, in order to give the secretaries the opportunity in the meantime of making careful and exact translations of the three resolutions, from French into English or from English into French, as the case may be.

— The meeting adjourned from 11.35 a. m. to 12.10 p. m.

**The President** — Gentlemen, I regret that the execution of our work has taken longer than was anticipated, but that has been due to the fact that an effort has



been made in a sense to combine the ideas of the various resolutions which have been presented into a joint or common resolution. How successful that effort has been, it remains for the Section to determine. This alternative resolution which has been prepared and has been written in French is now being translated into English, and, in order to save time and expedite matters, I will ask Mr. Clower, while that translation is being made, to read the original resolution presented by Sir Evelyn Cecil in the English language and then in the French translation.

**Mr. Clower.** — This is the summary in English : « That the 4th Section is of opinion, after the full statements by the representatives of the different countries, that a rigid eight-hour day is not practicable, owing to the varying local conditions and requirements, but that each case should be examined with due regard to surrounding circumstances and taking into consideration the special character of the railway work to be executed. »

(The Principal Secretary read the resolution in French.)

**The President.** — Gentlemen, you have now heard the amended resolution presented by Sir Evelyn Cecil both in English and in the French translation. There will be a delay of a few minutes while the alternative resolution is being translated. In the meantime it occurs to the Chair that we might well occupy the time of waiting with a discussion of the resolution proposed by Sir Evelyn Cecil, and, while that may be slightly out of order, because of the fact that the Section should have both resolutions before it in order to discuss them intelligently, the Chair would be glad to entertain the

remarks of any member of the Section who cares at this time to support the resolution proposed by Sir Evelyn Cecil.

**Mr. Gufflet (in French).** — It is rather difficult to discuss Sir Evelyn Cecil's text without having the joint text also before us.

**Mr. Santini (in French).** — There are perhaps special reasons for supporting Sir Evelyn Cecil's resolution.

**Mr. Gufflet (in French).** — It would be preferable to have the text of both resolutions before us. I propose, therefore, that voting be deferred until tomorrow. This postponement is all the more desirable as a large number of our colleagues have already left the meeting. (*Approval.*)

**The President.** — I would suggest that we delay a decision on that point until we have before us this alternative resolution, and it may be that we can come to an immediate vote on it this morning, which would be preferable to delaying the matter till tomorrow morning. I therefore suggest that that matter be held in abeyance for the moment.

Gentlemen, the hour is now so advanced that we will simply take a few minutes to have read the translations of the resolutions which have been put forward, and you are requested to carry in your minds after you leave here the terms of the resolutions and to be here tomorrow morning at 9.30 prepared to discuss them. It is proposed to take the vote within an hour from the opening, that is, by half-past 10, so I would particularly ask you to be here promptly at 9.30, because we are stealing in a sense the time belonging to another object. We will allow one hour tomorrow morning for the purpose of passing this resolution.

Mr. Harper, *Secretary*. — The English translation of the resolution is as follows :

« The 4th Section, taking note of the information given by the representatives of the different countries, is of opinion that the application of the eight-hour day to railways renders it necessary to take into account in individual cases the special local or technical factors. It draws attention more particularly to the necessity :

« 1) of not confusing presence on duty with actual work, while at the same

time being careful to limit reasonably the length of presence on duty on any one day;

« 2) of spreading over a sufficiently long period the compensations necessary to arrive at an average eight-hour day with a limited number of overtime hours;

« 3) of increasing the individual output of work by a development of mechanical appliances and in certain circumstances by the utilisation of specialised labour. »

— The meeting adjourned at 12.30 p. m.

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Meeting held on 25 June 1925 (morning).

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Dr. J. H. PARMELEE, PRESIDENT, IN THE CHAIR.

— The meeting opened at 9.30 a. m.

The President. — Gentlemen, I am asked to announce that on account of the banquet this evening there will be no afternoon session of the 4th Section, but it is suggested that in order, if possible, to complete the work before the Section the morning session should be continued to 1 o'clock or as much later as may be necessary to complete our work at the morning session.

In accordance with the agreement made at the close of the afternoon session yesterday, one hour has been allotted at the beginning of the session this morning for the completion of the discussion of the eight-hour day. As the texts submitted to yesterday's meeting have been read, it is probably unnecessary to read them again, particularly as you will find them in *Daily Journal*, No. 3 (page 10), copies of which have been distributed to you.

Sir Evelyn Cecil has some suggestions to make to the Section which may enable us to get more rapidly through our work this morning.

Sir Evelyn Cecil. — Mr. President and Gentlemen, we have been trying during yesterday evening and this morning to obtain unanimity, and if we can fit in these two resolutions together rather more closely I think it might tend to expedite the business of the Section. It occurs to me that, if the Section were so disposed, the best course perhaps would be to accept — if you have before you page 10 of the *Daily Journal* — my summary, which is a general summary as follows :

« That the 4th Section is of opinion, after full statements by the representatives of the different countries, that a rigid eight-hour day is not practicable, owing to varying local conditions and requirements, but that each case should



be examined with due regard to surrounding circumstances, and taking into consideration the special character of the railway work to be executed. » Taking that, we might then omit the first paragraph of the alternative resolution, which is nearly the same thing in somewhat different words, perhaps not quite so precise. Then we might add to my resolution the following words of the alternative resolution, namely :

« The Section draws attention more particularly to the necessity : 1) of not confusing hours on duty with actual work, while at the same time being careful to limit reasonably the length of hours on duty on any one day ». Having made a general statement at the beginning, there seems to be no reason why we should not thus emphasise more particularly some things which our French friends and others desire to emphasise. I individually and I dare say many others would be willing to accept that in addition to my resolution. As to paragraph 2, beginning with the words : « of spreading over a sufficiently lengthy period », there is some difficulty as it stands. The British railway representatives and others feel that anything that is laid down in that sense cannot be acted upon in this country, because for some time our Government has made an agreement with the railwaymen and the Trade Unions which is contrary to the effect of this paragraph. So that if any paragraph of this kind was laid down, it is not at present practicable for British railways to carry it out. We might leave the matter open for discussion in a few minutes if desired. Passing on to 3 with the words « of increasing the individual output of work more especially by a development of mechanical appliances and in certain circumstances by avoiding

excessive specialisation in labour », I have no objection personally to adding that to my resolution if the Section desires it, although I do not know that there is any very great object in having it. Therefore the result of what I am saying is that I would propose that my resolution be adopted, and possibly, if the President thinks proper, we might vote upon it first of all. Then I propose we should add to it the words beginning : « The Section draws attention more particularly » and the whole of paragraph 1, leaving out for the moment paragraph 2 and adding, if the Section desires it, paragraph 3. As to paragraph 2, I should like to hear something further before it is included.

**The President.** — Gentlemen, an admirable method of arriving at a decision has been suggested in these remarks by Sir Evelyn Cecil, and unless there is serious objection on the part of the members of the Section we will in a few minutes proceed to vote paragraph by paragraph what will virtually be a combined resolution, a combination of the two resolutions, taking first of all Sir Evelyn Cecil's resolution, as contrasted with the first paragraph only, of the second or alternative resolution, and then proceeding paragraph by paragraph through the three numbered paragraphs of the second resolution, discussing them each in turn and voting upon them.

If there is no objection — and the President hears none — we will proceed to discuss briefly Sir Evelyn Cecil's resolution as contrasted or compared with the first paragraph of the so-called combined or alternative resolution, and we will first have a brief discussion on those two paragraphs. Let me remind the members of the Section that our time is limited and you are asked to be extremely

brief in your remarks. The discussion is now open on this first paragraph.

**Mr. Colson** (in French). — Gentlemen, I venture to remind the meeting of the reasons why certain of us wish to propose the adoption of the first paragraph of the joint final resolution instead of the first part of the text proposed by Sir Evelyn Cecil which is definitely opposed to the principle of the eight-hour day.

We must consider facts as we find them. In most countries there is a general current of opinion in favour of the eight-hour day : certain governments attempt to oppose this current, others move with it, but in any case it will certainly triumph in the end.

Whatever may be our personal opinions on the question, it is scarcely credible that we shall be able to modify the attitude of the governing powers in the different countries. What we are entitled to hope, speaking exclusively as railwaymen and from the point of view of the exigencies of the railway service, is that we may be able to ensure that the law is applied in a manner consistent with the interests of the service. We believe that we shall command more authority *vis-à-vis* parliaments, railway administrations and railway employees if we do not begin by saying that the law is not capable of application to the railways, when as a fact in no country are more than 8 hours effective work demanded of employees.

We are consequently of the opinion that it is wiser to avoid a discussion of the principle. If we begin by criticising or disputing it, our remarks would simply be ignored by its partisans. The case would be quite otherwise if our remarks could be interpreted to mean that the principle will be applied within reason. (*Applause.*)

**The President.** — Without waiting for an English translation of the remarks made by Mr. Colson, Sir Evelyn Cecil would like to say a few words in reply to Mr. Colson's remarks.

**Sir Evelyn Cecil.** — I am sorry to trespass upon the time of the Section again, but I am bound to say that Mr. Colson has quite misrepresented my view. What he has said is that I am opposed to an eight-hour day in principle, and I have not stated that. What I have stated is that a rigid eight-hour day is not practicable. The whole emphasis is on the word « rigid », and, while I quite assent to a general endeavour to carry out as far as practicable an eight-hour day, a rigid eight-hour day is not, in my opinion, workable and it is not so in the opinion of, I think, nearly everyone in this country. I am not objecting to the broad principle of an eight-hour day; I am only saying that an eight-hour day which is strict and rigid is not practicable, and that is where Mr. Colson has misrepresented me.

**The President.** — There being no further discussion on the first paragraph, a vote shall now be taken by show of hands on the amended text submitted by Sir Evelyn Cecil as the first paragraph of the final summary, which reads as follows :

« 1) The 4th Section is of opinion, after full statements by the representatives of the different countries, that a rigid eight-hour day is not practicable in the case of railways owing to the varying local conditions and requirements, but that each case should be examined with due regard to the particular circumstances and taking into consideration the special character of the work to be executed. »

— This text is adopted as the first

paragraph of the final summary, there being 90 votes in its favour as against 35 votes in favour of the first paragraph of the alternative text.

The President. — It is now open to you to discuss the second paragraph of the final summary, which consists of the first paragraph of the joint resolution :

« 2) The Section draws particular attention to the necessity : a) of not confusing hours on duty with actual work, while at the same time being careful to limit reasonably the length of hours of duty on any one day. »

— This paragraph is adopted unanimously.

The President. — I will now put to the vote paragraph 3 of the joint resolution, which if it is adopted, will form the second paragraph of the final resolution :

« 3) To increase the individual output of work, particularly by an increased use of mechanical appliances, and, in certain cases, by the utilisation of specialised labour. »

Mr. Gil Clemente, Ministry of Public Works, Spain (in French). — I consider that the two paragraphs already voted are amply sufficient, and that it is undesirable to enter into details which may prove inconvenient in certain cases.

Mr. Hill. — Mr. President and Gentlemen, I should like to say that I personally fully appreciate the attitude of the delegate who has just spoken. To introduce the question of increasing the individual output without attaching any statement as to the object to be aimed at seems to be rather a dangerous course to adopt, and I suggest for consideration that perhaps it might meet the different sections if you added, with reference to

the object we propose to attain by the method stated in No. 3, the words : « in order that the maintenance of a reasonable standard of hours may be economically practicable » at the end of No. 3. I take it that the object of paragraph No. 3 increasing the individual output by mutual action of both sides — that is to say, the managements must do their part and the employees must do their part — is that a reasonable number of hours may be economically practicable.

Mr. Santini, *Principal Secretary* (in French). — Mr. Gil Clemente considers it unnecessary to discuss the third paragraph of the joint resolution, in view of the adoption, as paragraphs 1 and 2, of the resolution proposed by Sir Evelyn Cecil and of the second paragraph reading as follows : « of not confusing hours on duty with actual work, etc. ».

The members of the Section will take this suggestion into consideration when voting on the third paragraph.

Mr. Colson (in French). — We do not insist on the inclusion of the third paragraph, but we do insist on the second.

The President. — In view of the remarks made by Mr. Clemente and the fact that Mr. Colson does not insist on the adoption of the third paragraph, we will withdraw that paragraph from further consideration. (*Assent.*)

— The third paragraph of the joint resolution is accordingly withdrawn.

Sir Evelyn Cecil points out a slight variation between the English and French texts of his resolution.

Mr. Colson (in French). — We are in agreement with your text as voted by the meeting.

The President. — The second para-



graph of the joint resolution is now open for discussion :

« 2) Of spreading over a sufficiently lengthy period the compensating number of hours of duty in order to strike the average of an eight-hour day with a limited number of overtime hours. »

Some question seems to have arisen as to the exact meaning of this paragraph, and I should be glad if some light could be thrown on it by any of the members.

**Mr. Colson** (in French). — This is the meaning which we attach to paragraph 2.

In the application of the eight-hour day in France, we do not endeavour to deny that the workmen are entitled to a limit of eight-hours of work per day on the average. On certain days, however, in view of the nature of the train service we may be faced with the alternative of either keeping men on for 9 or 10 hours or sending them away at the end of 4 or 5 hours. In such cases if we are limited to eight hours per day, we only obtain an average of from 6 to 6 1/2 hours effective work.

When using the words « eight hours » we assume a reasonable number of days as the basis of calculation. If the basic period is a fortnight, some men will do eight hours, others six, whereas if the limit is eight hours on any given day many of the men will never do more than 6 hours' actual work.

We wish to have an average, and many of the men approve of this system because it gives them longer periods of liberty.

We demand that the eight-hour day be an average calculated over a reasonably lengthy period. The essential point is the word « average ».

**The President.** — **Mr. Alexander Wilson**, Divisional Manager of the London & North Eastern Railway Company, has

a suggestion to make as to the modification of the language of this paragraph.

**Mr. Alexander Wilson**, London & North Eastern Railway. — **Mr. President and Gentlemen**, we should be prepared, and it would not cut across any of our arrangements under the National Agreement, to modify paragraph No. 2 to the following effect : « of spreading over a sufficiently lengthy period the compensating number of hours of duty », and leave the paragraph there. I think that will give our French friends what they want and at the same time will not create difficulty with us over here. Under our National Agreements of course we have the guaranteed day and the guaranteed week; consequently it would be very difficult indeed for us to adopt the principle of averaging the eight-hour day over a period. I therefore beg to move that paragraph 2 stand as follows : « of spreading over a sufficiently lengthy period the compensating number of hours of duty », and that would leave it to our French friends to adopt that if they think it necessary.

**Mr. Colson** (in French). — We might say : « of spreading over a sufficiently lengthy period the compensating number of hours of duty in order to strike the average of an eight-hour day ».

**The President.** — After considerable discussion here at the speakers' table, a compromise suggestion has been made, that paragraph 2 be left as it was originally written and as it appears in the *Daily Journal*, with the addition of the saving clause : « as the circumstances of the several countries permit ».

**Mr. H. E. Williams**, Eastern Bengal Railway, British India. — **Mr. President and Gentlemen**, I oppose the inclusion of paragraph 2. In the first place, I re-

gard it as redundant. If you limit the length of hours of duty on any one day, it seems to me that it follows automatically that you spread over the compensating period the limit; you cannot lengthen the hours of duty reasonably. Apart from that, the body of the resolution states that a rigid eight-hour day is not practicable, and this paragraph admits, to my mind, the practicability of an eight-hour day. I am opposed to the inclusion of this paragraph and I suggest that it be deleted entirely.

Mr. Epinay, Paris-Orleans Railway (in French). — I venture to point out that the paragraph which Mr. Colson proposes we should adopt is nothing more than a résumé of a section of the excellent report presented by the President and published in full in the *Daily Journal*. The Section to which I refer reads as follows :

A serious problem in the United States is that relating to the stabilisation of railway labour, that is the problem of supplying continuous and permanent employment to the greatest possible degree.

The American railways are confronted with two difficulties in this connection. The first is climatic, due to the fact that in many sections (especially in the north) our severe winters make it impossible to carry on maintenance of way during several months in each year. The second is the sharp variation in freight and passenger traffic from month to month, which affects both the train forces and the forces in the repair shops. Our traffic in October is often twice as great as in February, and changes occur upward or downward with great rapidity.

As to climatic difficulties, little can be done, although some northern lines have recently experimented with track work in winter, and have been able to spread that work more evenly through the year.

As to traffic variations, there is only one effective remedy, which is to maintain a uniform force of employees, and to vary their hours per day or per week in correspondence with the traffic. Thus, the same men might work only six hours per day during certain months of the year, eight hours during certain months, and ten hours during certain months, averaging eight hours for the year as a whole. A sliding scale of hours has actually been adopted on a few railways, but is opposed by the trade unions wherever their strength in numbers is sufficient to make itself felt. The unions sometimes agree to a forty-hour week, made up of five days of eight hours. Seldom, if ever, do they agree to a shorter day than eight hours, although in effect there is little difference between three days of eight hours each, or four days of six hours each.

Mr. Graham, Great Indian Peninsula Railway, British India. — Mr. President, may I rise on a point of order, that you said this discussion should not last longer than an hour.

The President. — Do you call for a division on this paragraph without further discussion?

Mr. Graham. — Yes.

The President. — Gentlemen Mr. Graham calls for a division, and I therefore put to the vote the final paragraph reading as follows :

« b) Of spreading over a sufficiently lengthy period the compensating number of hours of duty in order to strike the average of an eight-hour day with a limited number of overtime hours, as the special circumstances of the several countries permit. »

— This paragraph is adopted by 55 votes to 41.

Mr. Santini (in French). — The reso-

lution regarding the eight-hour day now reads as follows :

« 1. — The Congress is of opinion, after full statements by the representatives of the different countries, that a rigid eight-hour day is not practicable owing to the varying local conditions and requirements, but that each case should be examined with due regard to surrounding circumstances and taking into consideration the special character of the work to be executed.

« 2. — The Congress draws attention more particularly to the necessity :

« a) Of not confusing hours on duty with actual work, while at the same time being careful to limit reasonably the length of hours of duty on any one day.

« b) Of spreading over a sufficiently lengthy period the compensating number of hours of duty in order to strike the average of an eight-hour day with a limited number of overtime hours, as the special circumstances of the several countries permit. »

— Adopted.

— The meeting ended at 11.10 a. m.

## DISCUSSION AT THE GENERAL MEETING

Meeting held on 27 June 1925 (morning).

THE RIGHT HON. VISCOUNT CHURCHILL, PRESIDENT, IN THE CHAIR.  
GENERAL SECRETARIES : SIR HENRY FOWLER and MR. P. GHILAIN.

Sir Henry Fowler, *General Secretary*, read the final summary adopted by the 4th Section.

— This final summary gave rise to no comments.

The President. — The final summary is therefore as follows :

### Final summary.

« 1. The Congress is of opinion, « after full statements by the representa- « tives of the different countries, that a « rigid eight-hour day is not practicable « owing to the varying local conditions « and requirements, but that each case « should be examined with due regard to « surrounding circumstances and taking

« into consideration the special character « of the work to be executed.

« 2. — The Congress draws attention « more particularly to the necessity :

« a) Of not confusing hours on duty « with actual work, while at the same « time being careful to limit reasonably « the length of hours of duty on any « one day.

« b) Of spreading over a sufficiently « lengthy period the compensating num- « ber of hours of duty in order to strike « the average of an eight-hour day with « a limited number of overtime hours, as « the special circumstances of the several « countries permit. »

— This final summary was ratified by the general meeting.



## QUESTION XI.

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### STATISTICS.

*Development of railway statistics with the special view  
of economy in operation.*

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#### Preliminary documents.

1st report (all countries, except America), by Mr. A. E. KIRKUS. (See English edition of the *Bulletin*, November 1924, p. 947, or separate issue [with red cover] No. 6.)

LOREE. (See English edition of the *Bulletin*, May 1925 [1st part], p. 1465, or separate issue [with red cover] No. 37.)

Special reporter : Mr. A. E. KIRKUS.  
(See English edition of the *Bulletin*, June 1925, p. 2142.)

2nd report (America), by Colonel J. T.

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## DISCUSSION BY THE SECTION

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Meeting held on 25 June 1925 (morning).

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Dr. PARMELEE, PRESIDENT, IN THE CHAIR.

The President. — Gentlemen of the 4th Section, we will proceed with the next subject on our programme, which is that of railway statistics, the development of railway statistics with the special view of economy in operation. The President would like to call your particular attention to the words « economy in operation », which are in a sense the controlling words in the discussion of the subject as it has been considered and developed by the two reporters who have presented papers on the subject. They have both stated specifically that they have had that particular phase of the

question in mind when they have been preparing their materials.

Two reports on the question of railway statistics are submitted to the Section, the first by Mr. A. E. Kirkus, Director of Statistics, Ministry of Transport, Great Britain who has covered the subject for all countries except America and the second, by Col. J. T. Loree, Vice-President and General Manager of the Delaware & Hudson Railroad, who has covered the railway statistics for the United States of America.

The special reporter is Mr. A. E. Kirkus, from whom we shall hear shortly.

Mr. Kirkus then read his special report which appeared in the June 1925 number of the *Railway Congress Bulletin*, pages 2142 and onwards.

The President. — Gentlemen, the 4th Section is very deeply indebted to Mr. Kirkus for his clear presentation of the principal points contained in the reports made by himself and by Col. Loree on the subject of railway statistics as a means of securing economy in railway operation throughout the different countries of the world, and I feel sure that I can express both to Mr. Kirkus and to Col. Loree the appreciation of the 4th Section of the valuable and interesting reports presented to us this morning. (*Applause.*)

In view of the fact that the special report presented by Mr. Kirkus is in the hands of the members of the Section, both in the English and in the French languages, it hardly seems necessary to present in the brief session which we have this morning a complete French translation of the special report, and, unless such a translation is called for from the floor, we will proceed at once with the general discussion. (*Agreed.*)

Col. Loree, have you any supplementary remarks you would like to make to the Section? The members present are aware that Col. Loree represents the Delaware & Hudson Railroad in the United States.

Col. J. T. Loree, *Reporter*. — Since the reporter compiled the report which is in your hands, the United States Commerce Commission has undertaken an investigation having for its purpose the probable revision of their accounting system. It was, however, in such an indefinite position at the time of this Congress that the reporter felt it was un-

desirable to include any of the suggestions contained in that proposition at this time, but in all probability the reports of the United States Commerce Commission will be modified to a great extent within the next twelve months.

Mr. Giovane, Italian State Railways (in French). — I would like to draw the attention of the Section to one particular point.

The special reporter has not brought out the fact that the Italian railways prepare other statistics in addition to those contained in the annual report and in the monthly bulletins. I venture, therefore, to lay before you a list of the statistics not mentioned by Mr. Kirkus, and I would ask the President to have this list reproduced in full in the shorthand account of the proceedings in order to make the record complete. (*See appendix.*)

One further point. The special reporter states in his report that the difference in the methods of collecting statistical information diminishes the value of any comparison between the statistics of different countries.

The differences in question have been discussed at a number of previous Congresses of our Association, beginning with the first, held at Brussels in 1885, and thereafter at intervals up to the Berne Congress of 1910. In spite of many years of effort, these differences have up to the present made it impossible to introduce an international form of railway statistics.

The International Railway Union is at present studying this question in the light of past experience and particularly of the discussions which have taken place at the various Congresses of our Association, and hopes to arrive at a practical result.

The International Railway Union is

affiliated with our Association, and the relations between the two organisations are happily such that it is possible to ensure that they are not both engaged on one and the same question simultaneously.

In these circumstances I do not consider it desirable that the 4th Section of the London Congress should devote its time to the particular problem of international railway statistics, but should express the hope that the International Railway Union may succeed in laying the foundations for a practical solution.

I propose, therefore, that expression be given to this hope in the final summary of the 4th Section on the subject of statistics.

The President. — Gentlemen, is there any further general discussion upon any phase of either of these reports?

Mr. C. L. Edwards, London & North Eastern Railway. — Mr. President and Gentlemen, representing the London & North Eastern Railway of England, I think all of us present here to-day must be intensely interested in statistics, otherwise we should not spend our time here. As a statistician of thirty years' experience, I think if any good is to be obtained, either internationally or even within a country, more importance should be attached to the basis of compilation. If accurate compilation is to be obtained, the first thing required is to establish confidence amongst the people to whom those statistics are circulated. It seems to me a good deal of stigma is attached to railway statistics because, in the first instance, they are costly and, secondly, they do not always represent the facts. By not representing the facts I do not mean the mere addition of two and two making five, but with regard to the source from which the information

is obtained. There is absolutely no uniformity as to the exact period within which it is obtained or the document from which the information to be circulated is compiled, which lays down the manner in which it is compiled or calculated. I think that in the future far more attention should be given to the basic and fundamental compilation of statistics than is given to it at the present time. I realise that the information which is now being circulated in the railways of Great Britain as a consequence of the Railways Act of 1921 represents the maximum of useful information to the general public, but the British railways did one good thing when that Act was passed because the British railways of this country immediately set up a Committee of railway experts, and there is not a single statistic which is being compiled to-day, which forms a part of that publication, which is not and has not been the study of that special Committee called the railway statistics Committee. Their function has been to confer with the people who are responsible for these figures, so that when they receive them they have a certain amount of confidence in knowing that they have contributed to their compilation. I attribute a great deal of the success which those figures have attained to the setting up of that Committee of experts, who have invariably conferred with the officers themselves. It seems to me that more attention in the future must be directed to that source, if statistical information regarding railway operation is to be of the slightest value not only for securing economy within those railways but also for the better ease of comparing the results with those of foreign railways. Those of us who have travelled abroad upon foreign railways attach the greatest possible importance to being



able to compare their results, although the local conditions are totally different, in order to see in what way the results are achieved. All of us who are interested in these problems know how varying and how difficult are the things which have to be provided in order to ensure that a comparable figure is eventually arrived at. With those few words, I should like to press that as one of the points which in my opinion is necessary to-day. Further a great many statistics are compiled which are not what I call continuous but are statistics of a transitory nature. Those which in effect are obviously continuous and those which are technical are only of value when you know what they cost, and my suggestion is that statistics of a transitory nature, which are not statutory should always be revised once a year, in order that the people who receive them will be able to form an opinion as to whether they are worth the money that has been spent on them.

Dr. C. C. Wang, Chinese State Railways. — Mr. President and Gentlemen, my friend Mr. Edward's opinion has just reminded me of or emphasised what I had in my mind on the same lines, and it reminds me of a very clear statement made some years ago by one of the leading statisticians of the world — I will not mention his name, because he has passed away — who said there are three classes of liars in the world : the first are just what we call ordinary liars, the second are damned liars, the third are statisticians and since he was a statistician himself I think he was very nearly right, that is to say, when these men here are all interested in statistics, in looking over the materials presented to them, they can understand them. Therefore I think we are fortunate in the respect

that our report has already emphasised in a way, that more attention should be given to the preparation of clear instructions to those who prepare the statistics as well as to giving a clear definition in the reports. In that respect China, although it is very young in the matter of railways, has perhaps done something which might be of interest. We did not have much to do with statistics before 1912, but in 1912 we gathered together the leading statisticians of all nations, and Dr. Henry Adams was in charge, and as a matter of fact he was the originator of our system; he stayed with us for two years. We had with us some of the leading men from England, France, Germany, Belgium, India and Japan, and some other places. We had the experience of all countries, and we put that experience together, and in one year we were able to produce a system of statistics with regard to which a Committee consisting of the Parliamentary Commission, issued a report, and if you will read it you will see that they express a very high opinion of what has been done as the result of the international moulding of ideas. There is one particular, I think, in which it is different from the others : we give out instructions to the lower men in charge of the lower basis of statistics, and they are also provided with instructions in the meantime, and in the published report at the head of each table it is clearly explained why and how each period is arrived at, so that even the layman can check the accuracy or the usefulness of the statistics. With those introductory explanations on each table, much of the former misunderstanding or ambiguity which had existed before was removed, at least in our case. After our experience we found it necessary to emphasise the importance of having clear, definite and uniform definitions of all

the headings and nomenclatures of the statistics of all the railways in the country, and we have definite and uniform instructions for the agents in preparing the statistics. I may say that I have presented a copy of the report to Mr. Kirkus, our reporter, and he expressed the same opinion this morning. I have a few copies of this at my hotel, and if any gentleman is interested I shall be delighted to give them away for reference.

Mr. Van Wasseenaar, Central Argentine Railway. — Mr. President and Gentlemen, I have to apologise in the first instance for taking up a few minutes of your time, but the importance of the subject is so great that it is absolutely necessary to endeavour to establish a more uniform system of compilation of statistics, as has been pointed out clearly by Mr. Edwards, and it must be present to one that there is something wrong, and I venture to place before you a practical instance which I will say without any doubt whatever is of very frequent occurrence. I am confining myself to what we might call operating statistics, that is to say, statistics which show the expenditure corresponding to a certain well defined rate. The operating statistics will show us whether the traction expenses are high or low, whether they go down or whether they go up. They will show us the managerial expenses, but they show those only for one individual railway. Therefore, although these statistics may be satisfactory for a particular railway, they may be fundamentally wrong, and I put it to the Section whether such a failure to be able to correctly compare statistics can be justified. I will give you an example. The General Manager of the company would naturally take a great interest in watching those fluctuations,

and he writes and says: « Kindly note on a comparison you show a very much more favourable result with such and such a railway. » — I will not mention the railway — « Please let me have an explanation ». I can see that most of you have seen those letters very often. At the same time the General Manager says to the Accountant's Department: « Kindly let me have your professional opinion », and the General Manager looks into it and he finds something, but finally in most cases it is the Chief Accountant who has to give the explanation, and he replies as follows — this is the keystone to the whole difficulty — « I am in receipt of your letter of so and so ». « I have carefully studied the matter, have made local enquiries, and find that the figures cannot be compared, because the basis is totally different. This company has included in its expenditure this item and we have excluded that item, and therefore a comparison under the present conditions can hardly be made. » That is a practical instance which happens to us every day, and I can imagine, as you can imagine, the feeling of the General Manager that he does not know what to do, because the fundamental principle is wrong. The only point I want to put before you is the necessity of having the statistics in a comparable form.

Mr. Lamalle, Belgian State Railways (in French). — The speakers who have preceded me have given expression to considerations of a general character with which we shall all be in agreement. I should like, however, to call the attention of the meeting to certain specific points.

The subject before us is this: *Development of railway statistics with the special view of economy in operation.*

Everyone will agree with the reporters when they say that the cost per ton-mile and the cost per passenger-mile may be considered as the touchstones of the whole matter.

The special report enumerates certain most interesting statistical data, but I do not see any reference therein to what we may call the « rotation » of rolling stock or the period of utilisation of wagons, that is to say, the length of time a wagon is in use from the moment when it is first loaded until the moment when it has to be reloaded. In Belgium this period works out at an average of five days. The « rotation » element is very important and should be taken into consideration.

A second important statistical factor is the percentage utilisation of wagons compared with their available capacity. On all railways there are wagons of 20, 30 and 40 t. capacity, and it is important to ascertain to what extent this capacity is taken advantage of by traders. It is useful to know the average utilisation, for this knowledge makes it possible to modify tariff rates in order to induce the trader to make better use of the capacity available.

One further point. A desire has been expressed for the establishment of uniform statistics. Might we not add that it would be desirable to choose standard units, and, being a Belgian, I can only propose the adoption of metric units. The kilometric ton might well be taken as the uniform statistical unit. (*Applause.*)

The President. — Gentlemen, our time this morning is unfortunately drawing to a close, and without there being any desire on my part to curtail the discussion, I feel that within a very few minutes it will be advisable for me to present a few general considerations to the

members of the Section. Before I do that, however, Mr. P. P. Teixeira, of the State Railways of Portugal, wishes to be heard.

Mr. Teixeira, Portuguese State Railways (in French). — I merely wish to support the views expressed by Mr. Lamalle as regards the adoption of a metric unit as the international statistical basis, especially from the point of view of reduction of working expenses.

I propose that the Section formulate a recommendation in this sense.

The President. — Gentlemen, if you will permit me to make a few remarks at this point, I think that those remarks will cover the point already made by Mr. Lamalle and Mr. Teixeira. If not, we must entertain further resolutions.

Reference has already been made, both in the reports presented to us this morning and also in the general discussion, to the vital importance of various statistics in the development of economy and efficiency in railway operation. It will be generally agreed, I think, that without proper statistical information, compiled properly for the use of railway operating officials, they are unable to analyse their operations intelligently in order to ascertain where and how increase in efficiency of operation may be effected. The only problem involved deals with the kind of statistics that shall be compiled, the extent to which details shall be developed, and the frequency of the reports to be made. Clearly local conditions must largely govern the solution of this problem, and no general rules can be laid down with regard to the statistics to be collected and compiled in any particular country or on any particular line.

It is also manifest that the general demands of economy require that statistical



work on the railways must always be regarded as the means of efficient operation and not as an end in themselves.

In considering this phase of the subject, it will doubtless be agreed that statistics should not be made so detailed and should not be permitted to add so greatly to the expense of operation as to become an economic burden rather than a means towards increased efficiency and economy.

In view of these general principles, the following resolution is submitted for the consideration of the 4th Section :

« The 4th Section, having considered the character and extent of statistical work on the railways throughout the countries of the world, submits the following general principles :

« 1) That accurate statistics of railway operations are an important and vital means for increasing railway efficiency and economy;

« 2) That all statistics must be regarded not as an end in themselves but as a means to increasing the production of adequate railway service with a view to making the cost of the service as low as possible to the user, and as remunerative as possible to railway owners;

« 3) That, with due regard to local conditions in each case, the expenses of compiling statistics should not be permitted to become an undue burden on the cost of railway operations;

« 4) That the continuation of the efforts hitherto made to standardise the collection and exposition of statistics in all countries is desirable;

« 5) That standard units be established for use in the compilation of statistics to the end that truer comparisons may be possible between the statistics of dif-

ferent railways or of different countries. »

I think that the last paragraph, relating to standard units as a general principle, may be regarded as covering the point made by Mr. Lamalle and Mr. Teixeira.

I may add, Gentlemen, that I am simply laying this resolution before you for the purpose of discussion, and not with any thought of giving you something to accept without prior consideration.

Mr. Giovane (in French). — We should have time to consider this resolution. I propose, therefore, that discussion upon it be deferred until to morrow.

Mr. Santini, *Principal Secretary* (in French). — It is for the meeting to decide whether it wishes to continue the discussion or not.

The President. — I feel that to morrow we should not encroach upon the work of the Section in the morning, because that is a joint meeting with the 3rd Section and we have not the right to ask the 3rd Section to delay their meeting with us while we discuss this question further. However, if the 4th Section wishes to give further consideration to this subject, there is no reason why they should not sit on some future date, Monday or Tuesday of next week, if they so desire, for such consideration.

Mr. Lamalle (in French). — The remarks made by the President exactly express the general feeling of the meeting. I propose, therefore, that the resolution be adopted as it stands, subject only to verbal correction, if necessary, after it has appeared in the *Daily Journal*.

Mr. Santini (in French). — It should be easy for us to settle the matter.

Mr. Giovene merely asks that mention be made in the resolution of the efforts made by the International Railway Union. This could be done by saying : « That the continuation of the efforts already made — and amongst them those of the International Railway Union — to standardise the collection and compilation of statistics in all countries is desirable. »

Mr. Merentza, Roumanian State Railways (in French). — I agree with Mr. Lamalle, provided the President's remarks are incorporated in the resolution.

Mr. Santini (in French). — The President's remarks would be included in

the resolution as the first paragraph.

We shall take the various suggestions into account when drafting the text of resolution.

The President. — Gentlemen, is there any further discussion? If not, a proposal has been made by Mr. Lamalle and supported by other members of the Section that the resolution presented by the President should be accepted and approved by the Section, with such slight changes in wording as may be thought necessary upon further consideration.

— The resolution and the President's remarks were adopted.

— The meeting terminated at 1.30 p.m.

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# DISCUSSION AT THE GENERAL MEETING

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Meeting held on 27 June 1925 (morning).

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THE RIGHT HON. VISCOUNT CHURCHILL, PRESIDENT, IN THE CHAIR.

GENERAL SECRETARIES : SIR HENRY FOWLER and MR. P. GHILAIN.

Sir Henry Fowler, *General Secretary*, read the final summary adopted by the 4th Section.

— This summary gave rise to no discussion.

The President. — The following is the

## Final summary.

« 1) Accurate statistics of railway operation are of the utmost importance for increasing railway efficiency and economy;

« 2) Statistics must be regarded not as an end in themselves, but as a means of increasing the efficiency of the railway service, with a view to making the cost of the service as low as possible to the user, and as remunera-

« tive as possible to railway owners;

« 3) With due regard to local conditions in each case, the expense of compiling statistics should not be permitted to become an undue burden on the cost of railway operation;

« 4) The continuation of the efforts already made — and amongst them those of the International Railway Union — to standardise the collection and compilation of statistics in all countries is desirable;

« 5) It is further desirable that standard units be adopted for use in the compilation of statistics, to the end that truer comparisons may be possible between the statistics of different companies and different countries. »

— The General Meeting ratified this final summary.

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# APPENDIX

## ITALY.

Statistics published annually by the State Railways in addition to the statistics contained in the annual report and in the monthly bulletins.

### PART I. — Lines and technical data relating thereto.

#### Lines in operation on 31st December.

Length of line constructed.

Length of sections common to different lines.

Length under operation.

#### Locomotive stock.

Steam locomotives :

Tender locomotives. . . . .	} subdivided according to wheel arrangement.
Tank locomotives. . . . .	

Electric locomotives.

Steam and electric motor-coaches.

#### Coaching and wagon stock.

Carriages :

- ordinary, divided according to classes;
- for special services;
- total, subdivided according to number of axles and with or without brakes;
- number of axles;
- seats available; number per class, total and average per axle.

Vans :

- subdivided into ordinary vans, vans with compartments for goods and compartments for the postal service;
- total number and average number per kilometre of line;
- number of axles.

Wagons :

- |  |   |
|--|---|
| — subdivided into closed, open, special and other wagons. . . . .              | } with distinction between wagons for general traffic and wagons employed for purposes of the railway administration. |
| — total number and average number per kilometre of line . . . . .              |   |
| — total number, subdivided according to whether with or without brake. . . . . |   |
| — number of axles . . . . .  |   |
| — loading capacity, total, and average per axle . . . . .                      |   |

*Note.* — The amount of rolling stock in existence is shown for the beginning and for the end of the year, together with the variations throughout the year; this data is given either as actual totals, or as average amounts per annum.

#### Train mileage.

Mileage of the State Railways' own steam and electric trains on lines worked by the State Railways in Italy, and on foreign lines . . . . .	} Number of train-kilometres, distinguishing between general traffic and traffic connected with the working of the railway, the former being subdivided according to the different categories of passenger and goods trains.
Mileage, on lines worked by other railway administrations in Italy, of State Railways and other trains. . . . .	

### Mileage of locomotives and vehicles.

All mileages are subdivided in the same way as for train mileages, and, in addition, into empty and full journeys.

Locomotive mileages are subdivided, further, according to the system of traction (steam and electric) and the service (main line, shunting) with the different categories of passenger and goods trains.

Vehicle mileages are shown separately for carriages, vans and wagons.

### Train and rolling stock mileage per line.

#### Train mileage per line :

- passenger trains;
- goods trains, separately for each direction of traffic;
- trains for the internal service of the railway administration;
- total.

#### Locomotives mileage per line.

#### Axle-kilometres, of ordinary carriages per line :

- loaded;
- empty;
- total.

#### Axle-kilometres, of special carriages per line :

- loaded;
- empty;
- total.

#### Axle-kilometres, of vans per line :

- loaded;
- empty;
- total.

#### Axle-kilometres, of wagons per line :

- of freight trains (loaded and empty wagons, divided between general traffic and use for the internal service of the administration, and the total) . . .
- of trains for the internal service of the administration (loaded wagons, empty wagons, and total);
- total journeys.

Separately for the two directions of traffic, and together.

Total axle-kilometres of all vehicles (loaded, empty, and total) per line.

### Consumption of fuel, lubricants, etc., for locomotives :

- |  |   |  |
|--|---|--|
| <ul style="list-style-type: none"> <li>— for steam of traction . . . . .</li> <li>Consumption of each quality of fuel. . . . .</li> <li>Consumption of other materials (of each material for lubrication and for lighting) :</li> <li>— for electric traction. . . . .</li> <li>Consumption of each material used for lubrication and for lighting. . . . .</li> </ul> | } | <p>The number of kilograms consumed, and the cost (in lire) for locomotives and motor-coaches, separately and together; in actual values, and in relation to either train mileage or locomotive mileage.</p> |
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# Accidents and their consequences.

## Working receipts.

### Traffic receipts :

- passengers (tickets, special trains, various receipts, total) . . . . .
- luggage, dogs . . . . .
- goods (« grande vitesse », « petite vitesse », « petite vitesse accélérée », various receipts, total). . . . .
- total . . . . .

In actual value; in average per kilometre in operation, per train-kilometre, per axle-kilometre; percentage of total working receipts; receipts of ferry-boat service.

### Indirect receipts :

- Total . . . . .
- Refunds . . . . .

### Total working receipts. . . . .

## Working expenses.

### General working expenses (under 12 heads) . . . . .

### Expenses of various branches of the service. . . . .

### Central services (staff and general expenses, stores, book-keeping, offices of departmental managers) :

- Staff . . . . .
- Supplies . . . . .
- Total. . . . .

In actual value; in average per kilometre in operation, per train-kilometre, per axle-kilometre; in percentage of total working expenses; expenses of ferry-boat service.

### Operating and traffic department (under 14 heads). . . . .

### Locomotive, carriage and wagon department (expenses divided under 23 heads) . . . . .

### Way and works department (expenses divided under 14 heads). . . . .

### Supplementary expenses (renewals of rails, renewals of rolling stock, total. . . . .

### Total working expenses . . . . .

## Distribution of staff.

### Headquarters administration. . . . .

### Operating and traffic department. . . . .

### Locomotive, carriage and wagon. . . . .

### Way and works . . . . .

### Total . . . . .

### Ferry-boat service. . . . .

### Total number of staff. . . . .

For each category is given the number of officials, the number of workmen, and the total. These figures are given :

- 1) as the actual figures at the beginning and end of the year, with explanations of the variations;
- 2) as averages for the whole year and per kilometre of line.



### Expenses of operating staff.

Headquarters administration. . . . .	}	Expenses shown separately for officials and workmen, and total.
Operating and traffic department . . . . .		
Locomotive, carriage and wagon . . . . .		
Way and works . . . . .		
Total . . . . .		
Ferry-boat service. . . . .		
Sundry expenditure.		
Total expenses.		
Average expenditure per employee and per kilometre of line in operation.		

### Situation of pension fund.

### Health of staff.

## PART II. — Traffic statistics.

### Passenger traffic.

At full rates . . . . .	}	Separately for the three classes : a) Number and receipts in actual figures; b) Average value per unit of traffic and per kilometre of line.
At differential rates. . . . .		
Reduced rates . . . . .		
Return fares . . . . .		
Other categories. . . . .		
Six categories of circular season tickets. . . . .		
Special trains.		
Total receipts.		
Receipts per kilometre of line in operation.		

### Luggage, dogs and goods ("grande vitesse") traffic.

#### Quantity for each category of traffic :

— in actual figures; receipts in actual figures and in average value per unit of traffic.

### Goods ("petite vitesse") traffic.

#### Quantity and weight of consignments.

Receipts in actual figures and in average value per unit of traffic.

### Summary of traffic and working receipts.

For each main category of transport, and total :		c) receipts in average values:
a) actual quantity;		— per kilometre of line;
b) receipts in actual figures;		— per train-kilometre; — as percentage of total.

### Traffic and receipts of ferry-boat service.

## QUESTION XII.

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### JOINT STATIONS AND LINES.

*Allocating the cost of joint stations  
and lines between several railway administrations.*

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#### Preliminary documents.

1st report (France), by Messrs. COLLOT and BRUNEAU. (See English edition of the *Bulletin*, January 1925, p. 119, or separate issue [with red cover] No. 14.)

2nd report (all countries, except America, the British Empire, France, China and Japan), by Mr. U. LAMALLE. (See English edition of the *Bulletin*, February 1925, p. 571, or separate issue [with red cover] No. 22.)

3rd report (America and the British

Empire), by Mr. R. COPE. (See English edition of the *Bulletin*, January 1925, p. 140, or separate issue [with red cover] No. 14.)

4th report (China and Japan), by Mr. J. MURAI. (See English edition of the *Bulletin*, January 1925, p. 151, or separate issue [with red cover] No. 14.)

Special reporter : Mr. R. COPE. (See English edition of the *Bulletin*, June 1925, p. 2149.)

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## DISCUSSION BY THE SECTIONS

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### SECTIONS III AND IV (MEETING JOINTLY).

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Meeting held on 26 June 1925 (morning).

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Dr. J. H. PARMELEE, PRESIDENT OF THE 4th SECTION, IN THE CHAIR.

— The meeting opened at 9.30 a. m.

The President. — Gentlemen, we have to examine, during the course of this meeting of the 3rd and 4th Sections combined, the question of joint stations and lines.

Mr. du Castel, President of the 3rd Sec-

tion, unfortunately finds that he must leave within a very short time, and he has asked me to preside. I have to thank Mr. du Castel for the honour which he has done me in asking me to preside over your proceedings this morning.

The reporters who have dealt with the question which we have to consider are

Messrs. Collot and Bruneau for France; Mr. Lamalle for the other countries except America, the British Empire, France, China and Japan; Mr. R. Cope for America and the British Empire, and Mr. J. Murai for China and Japan.

Mr. R. Cope has kindly taken on the duties of special reporter to summarise the various reports which I have just mentioned. This special report will be found on pages 2149 and onwards in the June 1925 number of the *Bulletin of the Railway Congress*.

Unfortunately Mr. Cope is prevented from being present at our meetings. He has asked Mr. Dashwood, his assistant, to take his place.

Mr. Dashwood then read the special report which will be found in the pages referred to above.

The President. — Gentlemen, Mr. du Castel, the President of the 3rd Section, having been obliged to retire, we have the pleasure of having with us one of the Vice-Presidents of that Section, Mr. J. Milne. Mr. Milne is the Assistant General Manager of the Great Western Railway, Great Britain, and I take pleasure in welcoming him as the joint Chairman for this morning.

I most warmly thank Mr. Dashwood for having kindly read Mr. Cope's report.

You will note, Gentlemen, with what great care and accuracy the question has been dealt with, both by the various reporters and by the special reporter.

I declare the discussion to be thrown open, and will call upon Mr. Tsuneo Ito, the Japanese Government delegate.

Mr. T. Ito, Ministry of Communications, Japan. — Mr. President and Gentlemen, I wish to put before you some supplementary remarks relating to the

summary of the reports which has been submitted by Mr. Dashwood.

Before entering into the brief supplementary remarks, I should like to say that Mr. J. Murai, who was the nominated for the preparation of the present report relating to the joint stations in Japan and China, in his capacity of Director of the Traffic Bureau of the Ministry of Railways of Japan, has retired from service, and, consequently, I was asked to take his place as reporter.

I do not think that there remains much for me to say in addition to the summary of our report, which is prepared in a very clear and concise way, for which we are grateful to the special reporter, Mr. R. Cope, but I should like to draw the special attention of the delegates of the 3rd and 4th Sections to the Government policy in regard to the private railways, which has an important bearing on the arrangement for the joint use of stations and other facilities.

In Japan, the national principle is that the important trunk lines are owned and operated direct by the State, and encouragement and protection are afforded to the construction and development of local private railway enterprises. The result is that the Government owns and operates at present about 7 600 miles of line, whilst there is 2 500 miles of line under the management of 160 private railway companies, dealing with local transport. Most of these local railway lines are laid with physical connection with the Government railway lines and use jointly the stations and other facilities of the Government railways, and carry on through conveyance of passenger and goods traffic with the Government lines, the rules and regulations in force upon these private railways being established upon the



basis of those of the Government railways.

Since the private railway lines constitute feeders to the Government railways, the policy has long been adopted to give the private railways as much protection and encouragement as practicable, so that they may develop to their full extent. In pursuance of this policy, the expenses that the private railways have to share in the joint use of the facilities with the Government railways have been reduced to the minimum.

Consequently, the practice in connection with joint use in Japan varies greatly from that in other countries where the arrangement is determined between parties on an equal footing. I ask you, therefore, to bear this fact in mind when you consider the situation in Japan in this connection.

Mr. Graham, Great Indian Peninsula Railway, British India. — May I say that we might take the last two paragraphs of the special report, as a basis of discussion. It seems to me they sum up the question of joint stations and lines.

The President. — Do you propose those two paragraphs as a resolution, Mr. Graham?

Mr. Graham. — Yes.

The President. — Mr. Graham proposes the adoption, as a resolution, of the last two paragraphs of Mr. Cope's report. These paragraphs are worded as follows :

« It will be noticed from the reports that although the principles governing the division of joint expenses are, on broad lines, the same in every country, yet owing to variation due to certain local factors, it has not been found possible to standardise either the agreements

or the method of apportioning the expenses, and, as the circumstances vary at almost every place, the method of apportionment adopted is the one which has been found, upon investigation, to be the most equitable.

« The basis of a joint arrangement is to insure that the expenditure is equitably apportioned and where the value of the work for one interest cannot be fairly determined by a division on the basis of numbers of passengers or tonnages alone, the numbers of trains or goods vehicles are frequently introduced. As each settlement is dealt with on the merits of the particular case, it is not possible to say that any method of apportionment has an advantage over the others. On the other hand, these variations have been accepted by all parties concerned as being fair and equitable. »

Mr. Lamalle, *Reporter* (in French). — The first paragraph of the proposed resolution reads as follows :

« It will be noticed from the reports that although the principles governing the division of joint expenses are, on broad lines, the same in every country, yet owing to variation due to certain local factors, it has not been found possible to standardise either the agreements or the method of apportioning the expenses, etc. »

Here we have the first point to be recognised, namely, that the principles upon which the division of the common expenses are to be divided are the same in all countries. Therefore, I think it would be well to differentiate between these principles and the « local factors » which are dealt with in the second part of the same paragraph.

Mr. Collot, *Reporter* (in French). — Mr. Bruneau and myself quite agree with

Mr. Graham that we should take as a resolution the two last paragraphs of Mr. Cope's special report, which are quite in agreement with the principles expressed in the final summaries which we have presented.

I would especially call attention in connection with this point, the fact that we are not dealing with technical questions on which recommendations may be made, but with agreements. However we all know that it is very difficult for any third party to form an outside opinion about an agreement made between two parties. It would therefore appear undesirable to make any definite recommendations on the advantages of any particular method.

Mr. Coates, Oudh & Rohilkhand Railway, British India. — Mr. President and Gentlemen, in India we find that the joint station agreements are often a cause of bad feeling and disputes between railways, leading in some cases to arbitration to effect a settlement, and I think it would be a very good thing if these sections of the Congress could recommend some standard form of agreement for adoption, on the basis of the traffic of the railways using the joint station or junction, taking into consideration the different classes of traffic using the station, as through traffic, interchange traffic and local traffic are accompanied by an expenditure at different rates. If there are exceptional cases, necessitating local modifications as is suggested in this report, the railways concerned could introduce modifications of the standard agreement to suit such cases. I think it would solve many of our difficulties and avoid a lot of correspondence if a standard form of agreement could be adopted generally, subject to modifica-

tion when necessary to suit local conditions.

The President. — Mr. Coates, may I ask if you have any definite resolution along the line you put forward?

Mr. Coates. — My intention was to suggest this point for discussion. I have not framed any resolution.

The President. — I would accept a resolution if you would write it out, in order that we may have the freest and fullest discussion of the matter.

Dr. C. C. Wang, Chinese State Railways. — Mr. President and Gentlemen, I wish to state that I agree with the last speaker, that is to say, we want to make all possible allowance for local conditions and yet, since we are all practical men, from our experience it seems to me we ought to lay down on broad lines what would be the right direction, leaving ample room for local conditions; therefore I support the opinion expressed by our colleague who has just spoken. I wish to save time, but perhaps I might say that, in addition to forming the resolution of the last two paragraphs of the report made by our special reporter, we should include the two preceding paragraphs. I think, if you will read those two paragraphs carefully, you will find that, although our reporter did not go on to suggest a solution in them, still there are certain suggestions in the third paragraph pointing to some kind of common method by which the expenses of joint stations may be apportioned.

The President. — I would like to make one comment in connection with the remarks made by Mr. Coates and Dr. Wang; that is, in case the paragraphs mentioned or any other paragraphs are selected as the basis for a resolution, some change

must be made in the exact wording of those paragraphs, and I assume that such a change is in the minds of the two gentlemen who have spoken.

**Dr. C. C. Wang.** — Yes, it has been suggested that the wording of these paragraphs should be changed.

**The President.** — I simply make that remark to clarify the situation.

Gentlemen, Mr. Coates has presented to the Chair a resolution written in English, and, if you will give the secretaries a few moments, that will be translated into French, and then it will be presented to the meeting both in French and in English. In the meantime, I will call upon Mr. Lamalle of the Belgian State Railways.

**Mr. Lamalle (in French).** — Mr. President, it appears to me that in the paragraph we have just been considering, we should in the first place state what the joint arrangements consist of.

I would point out that in all joint workings there are in the first place joint stations, there are also joint lines, and there may be joint junctions, and in each of these categories it is necessary to distinguish between capital charges, that is interest and depreciation, and working expenses, therefore I think that as a basis of our clause we should make a division into three categories, each of which will themselves be divided into two categories.

**Mr. Belmonte, Italian State Railways (in French).** — Gentlemen, on principle, I support Mr. Collot's proposal, that is to say, to take as the wording of our resolution the last two paragraphs of the special report.

I also think that the proposal which Mr. Lamalle has just made might be acted upon.

In the last paragraph of the special report it is stated :

« The basis of a joint arrangement is to insure that the expenditure is equitably apportioned and where the value of the work for one interest cannot be fairly determined by a division on the basis of numbers of passengers or tonnages alone, the numbers of trains or goods vehicles are frequently introduced. »

I propose to add « or the number of axles ».

**Mr. Gaeremynck, Belgian State Railways (in French).** — During the time that the wording is being decided upon, I would like to make some remarks as regards a comparison between Mr. Cope's final summary and general principles.

Our colleague states that : « Every joint arrangement is based on the necessary provision for an equitable division of the expenses. »

The principle of equity therefore appears in the division of the expenses.

However, I notice that the reporter states : « The costs of working joint junctions are to be borne entirely by the Company which is the new comer. »

I would ask if this is in keeping with the principles of equity. It is obvious that the existing company is in a privileged position and that it may impose certain conditions on the newly arrived company. However, the question is to know to what extent these requirements may exceed the bounds of equity. Suppose we have two companies A and B. If A is the first comer, its expenses will be X francs; if it is the new comer, its expenses will be much higher.

The proposed rule would establish a privileged situation for one of the companies. This should not be the case, although it must not result that by the establishment of joint working the pre-



existing company should incur a loss. The arrangements must depend on local circumstances.

**The President.** — We now have ready the French translation of the resolution proposed by Mr. Coates, and I will have it read in both languages. It is as follows : « That the 3rd and 4th Sections of the International Railway Congress should recommend for adoption a standard form of agreement for division of joint station expenses, taking into consideration the different costs of dealing with passing traffic, interchange traffic and local traffic, the railways concerned at any particular junction or joint station making a modification of the standard form if local conditions necessitate such. »

Gentlemen, I think we have heard enough suggestions now from the members of the sections, so that we may proceed to a definite consideration of the proposals before us. We seem to have three different resolutions or propositions under consideration at the present time. The first, proposed by Mr. Graham, was that we should adopt the last two paragraphs of the special report as our resolution. The second proposal, made by Dr. Wang, was in the nature of an enlargement or extension of Mr. Graham's proposal, and suggested that, instead of the last two paragraphs the resolution should consist of the last four paragraphs of the special report. The third proposal, made by Mr. Coates, has just been laid before you in the form of a resolution. Before opening the discussion on these wordings, I should like to ask Mr. Graham if he would be willing to accept Dr. Wang's proposal and in that way join those two suggestions into one.

**Mr. Graham.** — Yes, I would agree to that, certainly.

**The President.** — Then in that way we may regard it that the sections have only two proposals before them, one a suggestion by Mr. Graham and Dr. Wang, and the other laid before them by Mr. Coates.

**Mr. Eberhardt, Polish State Railways (in French).** — I think it would be well to put upon the agenda for the next Congress the determination of the basis for the division of expenses in joint stations.

Otherwise I support Mr. Coates' proposal.

**The President.** — Do you wish to put forward a proposal of that nature?

**Mr. Eberhardt (in French).** — I think that my proposal might be added to the resolution put forward by Mr. Coates.

**Mr. Lamalle (in French).** — It appears to me unnecessary to postpone the discussion of this question to another session, since it has been very fully dealt with and has formed a subject of very complete reports. We shall be no further forward in five years' time than we are to-day.

**The President.** — Mr. Eberhardt's suggestion is as follows :

« It is moreover suggested that a report should be submitted to the next Congress in order to determine the factors taken into consideration as a basis for the distribution of the expenses of joint lines and stations in cases where a difference arises between the two administrations concerned. »

Gentlemen, I will throw open this proposal for discussion after we have taken a vote on the two resolutions which have been suggested.

**Mr. Bruneau, Reporter (in French).** — Gentlemen, before taking a vote, I think it may be as well to point out that the

second and third paragraphs of the last clause have not the same value as a conclusion as have the last two. The latter have a general bearing, being matters of principle, whereas the two preceding paragraphs deal with a special question, the keeping of accounts. That is why I think it would not be well to put these two paragraphs at the commencement of our final summary.

What I say applies particularly to the first of these paragraphs. I recognise that the second contains a very important point, the idea of a check. However, this is rather a question of application which might come at the end of the final summary and not at the beginning.

In closing, I might say that I fully support Mr. Lamalle when he states that the question should be dealt with during the present session.

**Mr. Graham.** — May I ask whether it is understood to be an addition to the third resolution or whether it is a separate resolution?

**The President.** — No, it is an addition to the resolution proposed by Mr. Coates. I think before we come to a vote Dr. Wang has a comment to make.

**Dr. C. C. Wang.** — We have just had a little conversation with our friends on the left, Mr. Lamalle and others, and it seems to me that the general opinion is in the same direction only in that the resolution proposed by our friend Mr. Coates suggests some kind of formula, and it will require another session to determine what that formula shall be.

We might therefore accept the principles and the President might nominate a small committee to draw up this idea in an agreed form.

**The President.** — I was just going to

make the same proposal. The final summary of the resolution might be left to a committee composed of Messrs. Lamalle, Collot, Bruneau, Wang, Coates, Graham, Santini and the President.

Meanwhile, we can proceed to take a vote on the various proposals which have been put forward.

**Mr. Collot (in French).** — I ask that we should take a vote on each paragraph of the original proposal put forward by Mr. Graham, because in my opinion the first paragraph does not form a paragraph of the final summary.

**The President.** — The first vote to be taken is on the proposal of Mr. Eberhardt to adjourn to the next Congress the adoption of a method to determine the basis for the division of expenses in joint stations and lines.

Mr. Eberhardt's proposal was put to the vote and lost, only three being in favour.

**The President.** — We will now proceed to take a vote on the proposal put forward by Mr. Coates which has already been read.

**Mr. Mereutza, Roumanian State Railways (in French).** — We have a very definite proposal put forward by the Chinese Government delegates to form a Committee to draw up the final text. We should therefore in the first place vote on Dr. Wang's proposal.

**The President.** — I might point out that in conformity with parliamentary usage it is necessary in the first place to take a vote on Mr. Coates' proposal to which an addition has been proposed.

— A show of hands was taken on Mr. Coates' proposal, which was lost by 23 votes to 13.

**The President.** — We can now proceed to take a vote on Dr. Wang's proposal, at any rate as regards the principle of its adoption or rejection. It is to be understood that if this proposal is adopted, a Committee will take in hand its wording in the form of a resolution.

If the 3rd and 4th Sections agree to take as a basis the wording of the Committee which was appointed by the joint last paragraphs of the special report by Mr. Cope will form the resolution.

**Mr. Lamalle (in French).** — What has just been said is quite clear. I am not quite sure, however, what Dr. Wang's proposal is. (*Laughter.*)

**The President.** — I put Dr. Wang's proposal to the vote.

— This proposal was carried unanimously.

**The President.** — I would like to ask whether the joint sections wish to hear the report of this small Committee which is to be appointed or whether they are willing to leave the language of the resolution entirely to the Committee. If they wish to vote on the final summary, I would suggest that the session should be suspended until 12 o'clock and should reassemble in this room at 12 o'clock to vote on this summary. If you are willing to leave it to the Committee it can be more easily and simply arranged in that way, but it is for the session to decide.

We will now adjourn the meeting. Will Mr. Graham, Dr. Wang and Mr. Lamalle join us at the table?

**Mr. Lamalle (in French).** — The Committee should sit under the chairmanship of Dr. Parmelee, the President of the assembly. It is therefore necessary to first suspend the meeting.

**Mr. Santini, Principal Secretary (in French).** — That is exactly what the President proposes.

**The President.** — The meeting will be adjourned and the Committee will meet immediately. As has been already said, this Committee consists of Messrs. Lamalle, Collot, Bruneau, Wang, Coates, Graham, Santini and the President.

— The meeting was adjourned at 11.25 a. m. and re-opened at 12.25 p. m.

**The President.** — The special Committee which will be formed, the four meeting of the two sections to prepare the wording of the summary which has already been approved by the two sections is now ready to present its report, and I will ask the Principal Secretary of the 4th Section, Mr. Santini, to read the summary in the French language, and we will then have the English translation read.

**Mr. Santini** read the French text. — **Mr. King-Stephens, Secretary,** read the English text :

« Every joint arrangement is based on the measures that are necessary to ensure expenses being equitably divided, but differences arising from certain local factors prevent uniformity of methods for the division of expenses.

« It is consequently impossible to say that any one method has any advantage over others.

« With the exception of special cases where agreement has been reached for a fixed annual payment, an endeavour should be made to determine the value of the work done for each of the interested parties. When this estimate cannot be made with sufficient exactitude to admit of a division based only on the number of passengers or tonnage, the



number of trains, axles, or other elements may be introduced. It is sometimes possible to limit these elements to a given period and to adopt the results obtained as the fixed proportion for the division of the expenses, with the option of revising this proportion periodically if circumstances seem to require it. »

**The President.** — Gentlemen, the summary which has just been read in English and in French is now to be put to the vote. The discussion which is to be

opened before taking a vote, must, however, only have a bearing on the special question of whether the text correctly represents the four paragraphs which, in the first place, were adopted in principle as forming a basis of the resolution which we have to put forward.

— Nobody wishing to speak, the summary was put to the vote and carried unanimously.

— The meeting terminated at 12.35 p.m.

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## DISCUSSION AT THE GENERAL MEETING

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Meeting held on 27 June 1925 (morning).

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**THE RIGHT HON. VISCOUNT CHURCHILL**, PRESIDENT, IN THE CHAIR.

**GENERAL SECRETARIES :** SIR HENRY FOWLER and MR P. GHILAIN.

Sir Henry Fowler, *General Secretary*, read the final summary adopted by the 3rd and 4th Sections combined.

— This final summary gave rise to no discussion.

**The President.** — The following is the :

### Final summary.

« Every joint arrangement is based on  
« the measures that are necessary to  
« ensure expenses being equitably di-  
« vided, but differences arising from  
« certain local factors prevent uniformity  
« of methods for the division of expenses.  
« It is consequently impossible to say  
« that any one method has any advantage  
« over others.

« With the exception of special cases

« where agreement has been reached for  
« a fixed annual payment, an endeavour  
« should be made to determine the value  
« of the work done for each of the in-  
« terested parties. When this estimate  
« cannot be made with sufficient exacti-  
« tude to admit of a division based only  
« on the number of passengers or ton-  
« nage, the number of trains, axles, or  
« other elements may be introduced. It  
« is sometimes possible to limit these  
« elements to a given period and to adopt  
« the results obtained as the fixed pro-  
« portion for the division of the expenses,  
« with the option of revising this propor-  
« tion periodically if circumstances seem  
« to require it. »

— The General Meeting ratified this final summary.

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## 5th Section : LIGHT RAILWAYS AND COLONIAL RAILWAYS

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### INAUGURAL MEETING

23 June 1925, at 9.30 a. m.

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PROVISIONAL PRESIDENT : Mr. MARGOT.

MEMBER OF THE PERMANENT COMMISSION OF THE ASSOCIATION.

The President (in French). — I am instructed by the Permanent Commission to proceed with the formation of the secretariat for the 5th Section.

Article 14 of the statutes is worded thus :

« ART. 14. — Each section or committee shall appoint its own president, its own chief secretary, and its secretaries. The presidents of sections shall be officers of the Congress in virtue of their position.

« The sections and the special committees shall cease with the termination of each session. »

I think we can now proceed with the appointment of the secretariat. (*Approval.*)

The Permanent Commission suggests that Mr. G. SEMENZA, Engineer, delegate of the Italian Ministry of Communications, be appointed president. Is there any other candidate? (*No! No!*) I put this proposition to the vote.

— Mr. G. Semenza is unanimously elected president. (*Applause.*)

The President (in French). — I propose as vice-presidents :

Mr. T. BALS, Manager of the Roumanian State Railways;

Mr. H. CAUFRIEZ, General Manager of the Belgian National Light Railways;

Mr. F. PICK, Assistant Managing Director, Underground Electric Railways Company of London;

Mr. F. P. TEIXEIRA, General Administrator of the Portuguese State Railways, and as principal secretary :

Mr. E. BELPAIRE, Chief Engineer of the Belgian National Light Railways.

— This proposition was unanimously adopted.

The President (in French). — I congratulate these gentlemen on being unanimously appointed by the delegates, and I invite them to take their places.

— Messrs. Semenza, Bals, Caufriez, Pick, Teixeira and Belpaire then took their places amidst applause from the whole assembly.

Mr. G. Semenza (in French). — I thank you very sincerely, Gentlemen, for your kindness and the confidence you have been good enough to place in me.

— The Section, on the proposal of the president, completed its secretariat and drew up a provisional agenda.

— The meeting terminated at 9.50 a. m.

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## QUESTION XIII.

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### ESTABLISHMENT OF LIGHT RAILWAYS.

*Methods of establishing light railways or lines for developing new countries.*  
(*Laying-out, gradients, standard gauge, narrow gauge, etc.*)

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#### Preliminary documents.

1st report (America and the British Empire), by Mr. H. MARRIOTT. (See English edition of the *Bulletin*, October 1924, p. 847, or separate issue [with red cover] No. 3.)

2nd report (all countries, except Amer-

ica, the British Empire, China and Japan), by Mr. BONNEAU. (See English edition of the *Bulletin*, October 1924, p. 873, or separate issue [with red cover] No. 3.)

Special reporter: Mr. H. MARRIOTT. (See English edition of the *Bulletin*, June 1925, p. 2152.)

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## DISCUSSION BY THE SECTION

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Meeting held on 23 June 1925.(morning)

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Mr. G. SEMENZA, PRESIDENT, IN THE CHAIR.

— The meeting opened at 10.0 a. m.

The President (in French). — I am of opinion that, as practical men, we should avoid using flowery language and proceed to business at once. We will, therefore, start the discussion of question XIII.

I call on Mr. Marriott to read his special report.

Mr. Marriott, *Special Reporter*, then read his special report (which was published in the June 1925 number of the *Railway Congress Bulletin*, page 2152).

The President (in French). — I have to thank Mr. Marriott for the excellent report he has submitted to this meeting.

The discussion is now open, and I call upon Mr. Bonneau to speak.

As Mr. Bonneau appears to be absent I should like to know if any other member wishes to make any remarks with regard to the recommendations that will be added to the end of the special report. The first paragraph down for discussion reads as follows:

The suggestion that in one of the future sessions of the Congress it may be



found worth while to reserve a special title for railways laid down to open up new countries without classifying them with those usually called « light railways ».

It seems to me, Mr. Marriott, if I am right, your opinion is that the important distinction is between railways that are working in ordinary countries, and railways which are intended to open up traffic in new countries?

Mr. Marriott. — Yes, that is right.

Mr. F. Level, Railways of local interest, France (in French). — I must apologise for being the first to speak in this discussion, but I think it necessary to offer a few remarks on the very interesting report you have just heard.

It appears to us that the reporter has looked at the question from too narrow a standpoint, and it would be better to examine at greater depth the conditions of establishing light railways in new countries. The paper seemed to us to deal occasionally with special methods which can hardly be included in what we call « light railways ».

The report mentions the Decauville system of 60 cm. gauge (1 ft. 11 3/8 in.) and though we are by no means antagonistic to the system, experience seems to have taught us that the 60 cm. gauge is not suitable for lines for developing purposes, and in these cases the metre (3 ft. 3 3/8 in.) gauge is preferable.

The line of 60 cm. width is, we may be told, cheaper, which is quite true, but you all know, Gentlemen, that in all cases of railway concessions too narrow a view has been taken at the beginning, when the lines were made too light, the stations too small and the tractive power too weak. I am sure that all those who have been connected with laying down railways for the past 20, 30

or 40 years will certainly agree with me. We have all suffered, and are still suffering, from the smallness of our pioneer lines, so that when « light railways » for penetration purposes are planned, it is as well to consider the question with a generous mind, and I think, as a rule to adopt the metre gauge in preference to that of 60 cm.

It may be stated that during the war the Decauville railways rendered immense services, and this is true but then the conditions in those days were abnormal; it was found necessary to rapidly transport food and munitions close to the front lines and unseen by the enemy. The object in developing new countries is altogether different, it is necessary to have in these cases railways of high efficiency, and it is incontestable that the metre gauge is the most suitable for the purpose.

I know a 40 year old railway of the metre (3 ft. 3 3/8 in.) gauge with 20 kgr. per metre (40 lb. per yard) rails, over which it is possible to haul trains of 300 to 400 t. by 42-ton locomotives with five coupled axles. I do not think that this could be achieved with the Decauville system.

Coming to a second point, I see in Mr. Marriott's report :

They suggest that *maximum speeds* might be found to constitute one of the most important governing factors and that so far as this particular factor is concerned, light railways should be classified in two groups as follows :

- 1) Lines having an authorised maximum speed of 25 miles per hour, and
- 2) Lines having an authorised maximum speed of 15 miles per hour.

We may well ask if this classification is desirable. Would it be of any use to any one of us to be bound to either of these two categories? Personally I do

not see what advantage would be gained by this discrimination, and think that the controlling authorities would step in and raise many difficulties if this distinction was decided upon. In addition, could we possibly restrict ourselves to a speed of not more than 15 miles an hour when no one knows what progress may be in waiting for us to morrow?

I do not think so, and should be very glad to hear what my colleagues have to say about these different points.

Mr. Teixeira, Portuguese State Railways (in French). — Gentlemen, I wish first of all to offer my congratulations to the President who was just now elected unanimously to the chair, and to Mr. Marriott for the very fine and comprehensive report which he has given us on question XIII.

I agree with most of the observations advanced by Mr. Marriott but would like to dwell a little on the differences which exist between light railways and lines for developing new countries.

Mr. Level has just told us that he does not see eye to eye with Mr. Marriott as regards the view he advanced on page 855 of his report <sup>(1)</sup> on the subject of authorised speeds. It is very difficult I think, in many cases, to make a hard and fast line of separation between the so called light railways and the others. Still it appears to me that the speed factor is important as it is useful in making a comparison; it is in fact an essential element in the establishment of light railways, and consequently has a great influence in the cost of construction.

I have here a selection of photographs to show to members, of the Portuguese African Railways. These clearly show the difference which exists between the

light railways in the colonies and the other lines with heavy traffic.

In the Portuguese Colonies they have managed with 1.067 m. (3 ft. 6 in.) gauge to deal with transport equal to that on the European standard gauge lines, and there are in these colonies over 2 214 km. (1 375 miles) of such railways.

It should be considered, Gentlemen, that the object in view is not the same for light railways as it is for lines laid down to develop new countries. Light railways in Europe serve localities near to one another, but in the colonies to the contrary, light railways join up districts which are separated by long distances. Development is the main object of colonial railways, but in Europe the conditions are reversed for the main centres are in existence, industries are already developed, and it only remains to create a new method of transport.

Another point to notice, which springs from the very character of these different types of lines, is the following: European light railways never have to alter their lay out after construction, but in the colonies to the contrary it is often necessary to alter the lay out after working them for a time. In the latter, railways have to create industry and industrial centres, but in Europe light railways are laid down to serve centres which already exist.

In Angola, Mozambique, etc., we have lines for developing purposes on which a speed of 80 km. (50 miles) an hour is attained.

Other differences relate to the buildings, for the stations are not the same in the two cases. The aim in the colonies is to introduce civilization amongst the peoples so that the stations have to be constructed differently in the two continents, and I can show you the pho-

<sup>(1)</sup> *Bulletin of Railway Congress*, October 1924 number.

tograph of the Lourenço station which is formed of buildings which would not be constructed on any European light railway.

I may add that the important lines for the development of new countries are intimately connected with seaports, their objective being to take from the country native produce and to bring in foreign goods. For this reason this traffic is very profitable to the ports.

I should like to add that there are lines in the Portuguese colonies on which trains of 550 t. and even 1 200 t. are running on 30 to 40 kgr. (60 to 80 lb. per yard) rails.

The President (in French). — Now, Gentlemen, in order to save time, I think it better to divide the question and first of all examine the differences which exist between light railways and colonial railways. (*Approved.*)

Mr. V. De Benedetti, Ministry of Public Works, Italy (in French). — The President has suggested splitting up the question and examine first the differences between light railways and lines for developing purposes. To this I see no objection as far as I am concerned, and the question of gauges could be discussed separately later on.

With regard to Italy, which I represent as delegate of the Ministry of Public Works, I should point out that we have adopted the metre (3 ft. 3 3/8 in.) gauge in our colonies without considering whether the lines should be called colonial or light railways, and that all the lines are constructed on the same principle as those in Italy to the metre gauge, though, to be more precise, this is generally 95 cm. (3 ft. 1 3/8 in.) between rails.

As far as the colonial railways are concerned I think the lines which deal

with heavy traffic, and which are the main lines and the secondary lines which act as feeders, should be taken into consideration.

Secondary lines could be called light railways when, at the time of their construction or at least at the commencement of their working, the traffic they have to deal with is of small importance.

Mr. F. Level (in French). — It seems to me that we are going outside the question which is entitled « Methods of establishing light railways or lines for developing new countries ».

I do not think that we should to-day make a distinction between light railways and the others. It is a subject that has been brought forward at all the Congresses, and I myself mentioned it at the Congress of Rome. A good definition for light railways has never yet been found.

Why should we not confine ourselves to what experience has taught us, and why should we not state that all which do not form part of the main lines of each country may be included in the general title of light railways?

By doing this we should come back quite naturally to question XIII. It is very evident that when dealing with new countries one should endeavour at first to establish light railways, because it is never known positively what future is in store for them, or with what kind of traffic they may have to deal.

As far as I am concerned I understood that in this discussion we should try and find out the mistakes that have been made in constructing our lines in the past and the means to avoid them in the future when constructing lines for penetration purposes. This is why I myself pointed out that the chief mistakes we have all been guilty of are not only inadequate stations and lightness of en-



gines and rails, but also the general lay out of the lines.

I wish particularly to draw attention to this point : if we do not wish to lose time, do not try and discriminate between light railways and the others, for this has only a theoretical importance. The traffic of certain light railways is more important than that of secondary lines feeding a great railway system. It appears to me, therefore impossible to make any true comparison, and besides the question does not form part of the agenda.

**Mr. J. F. de Souza**, Ministry of Commerce and Communications, Portugal (in French). — I agree with Mr. Level that this is not the time to discuss the distinction between light railways and those laid down for developing new countries.

First of all it is not easy to define the difference between the two, and it may be pointed out that even in Europe we have new districts or countries where the construction of lines for their development may have to be decided upon. Such a district, for instance, may become in a short space of time the seat of a new industry, a mine or a quarry may be started, and the construction of a railway becomes a necessity. A programme of procedure is got out which is necessarily as economical as possible. Many instances could be given and consequently do not let us be stopped by a subtle distinction between light railways and colonial railways.

My idea, therefore, is that only two large groups should be taken into consideration :

- 1) Main lines;
- 2) Secondary lines of more or less importance.

Let us keep to these two large divi-

sions and discover the best methods of constructing secondary lines or light railways in such a way as not to compromise the future, and not make it impossible to turn them into main lines later on, if required.

**The President** (in French). — **Mr. de Souza** thinks that we should only deal with secondary lines and lines for developing purposes, whilst **Mr. Marriott** is of opinion that the question should resolve itself into light railways and railways for developing purposes.

**Mr. F. Level** (in French). — I referred to what was agreed to at Rome.

I remember that at the suggestion of one of our colleagues, **Mr. Tsang-Ou**, the Chinese delegate, it was settled that the question of railways developing new countries should be considered, and it is this question which has been placed on the agenda. **Mr. Tajani** should be able to recall the incident.

**The President** (in French). — I should be glad to know if the meeting wishes to first deal with the question of light railways and afterwards that of colonial lines, or if it prefers to only keep to the question of lines constructed to develop new countries.

The point may now be discussed.

**Mr. Gevaert**, National Society of Light Railways, Belgium (in French). — I have asked to be allowed to speak so that I might say a few words in reference to a remark made by **Mr. Level**.

**Mr. Level** made a point of mentioning the « mistakes made » when establishing colonial lines, and I wish to say that this statement should be accepted with a certain amount of reserve. We have a railway in our Belgian colony which was constructed for developing the country and may be classed as such, and

though lately this line has not been always equal to requirements, it would not be fair to blame the pioneers of this enterprise or the construction itself.

It is quite certain that if a railway of generous proportions had been laid down at that time the undertaking would have proved a failure, and those who advanced the capital would have lost nearly all. It was only as traffic increased that it was possible to improve the existing lines, and when a line is being brought up to date it is not always necessary to make good the mistakes that may have been made in the first instance.

It may be truly said of the Belgian Congo that no « mistakes » were made at its inception, and I was anxious to point out that no word of criticism can be levelled against those who were responsible for the construction of that line.

Mr. F. Level (in French). — Let Mr. Gevaert be reassured, for I did not refer to mistakes made in the colonies, but in Europe itself. The colonies have benefited from what has been done in Europe, and all I wanted to imply was that it was worth while to find out the mistakes we have made in Europe.

I quite agree, therefore, with what Mr. Gevaert has said.

Mr. Thonet, Tramways of Lombardy and Romagna, Italy (in French). — I beg to suggest that this discussion be closed. We all agree, I think, that a railway laid down for the purpose of developing a new country may be classed as a light railway. I would, however, draw your attention to a point raised by my friend Mr. Level, and I think with him that when light or secondary railways have been constructed, the future has not always been sufficiently taken into consideration. Mr. Level's expression « mistakes made » seems to strong

a term, for really no « mistake » has been made, but only an error in appreciation of what the future might have in store for these lines.

We class, therefore, these colonial railways, and railways for developing purposes, as light railways. This does not imply that rails of 15 or 18 kgr. (30 or 36 lb. per yard) should be adopted. The importance of the line, and especially its estimated future importance, should be considered. I have always been in principle opposed to light rails, and have argued this for many years, and practice has shown that after the development and growth in importance of various railways, especially in Italy, it is the right one.

I am strongly of opinion, therefore, that sufficiently heavy rails of from 18 to 25 kgr. (36 to 50 lb. per yard) should be used, and the rest of the material be proportionately strong and especially fish-plates, which should be fitted with six bolts, because the joint is never sufficiently resistant.

Mr. Marriott, *Special Reporter*. — Mr. President, I understand that some of the speakers are not quite clear as to what the intention of this paper was. May I say that the reference I was asked to report upon reads as follows : « Methods of establishing light railways or lines for developing new countries (laying out, gradients, standard gauge, narrow gauge, etc.) » and that was in my case with reference to America, Great Britain and the colonies. Neither America nor Great Britain are colonies; they are established countries, and, therefore, in writing my paper I took care to obtain from all the countries referred to me particulars of the construction and development of light railways in all those countries, and I found, as

had been found before, that there was a great deal of confusion as to what was meant by the term « light railway ». A light railway in one country is not a light railway in another country, and I thought it was right and proper that I should call attention to the fact, and I suggest that an effort should be made at this Congress to try and find a definition of what was a light railway — call it a secondary railway, if you like, but give it a proper definition. I am told other Congresses have had the same difficulty and could not agree on a definition, but we are all much wiser now and we ought to try to find a proper definition.

I do not think in dealing at length with the English and American and other parts of the world, I have gone beyond my limit and that I ought to confine myself only to colonies. In the same way my co-reporter Mr. Bonneau had referred to him certain definite countries, all except America, etc., and he has dealt with it very briefly, but he has found the same trouble as I have, namely, that there is a great difficulty in finding out what the term « light railway » means, and that is why I have dealt with it at some length.

The President. — Gentlemen, I think the moment has now come for the meeting to decide if they want to discuss the whole question of light railways or if they want to discuss only the part of it which is referring to the colonial and penetration line — new countries. I think General Mance wishes to speak.

Brigadier-General Mance, Permanent Commission. — Mr. President, what I want to say bears on this point. I suggest that there is another way in which the subject under discussion might be subdivided, which does not exactly cor-

respond with the suggestion made by Mr. Marriott. It seems to me that in present day conditions we have to consider firstly what has been referred to by various speakers as lines of penetration, which, as light railways, can only exist in the colonies. A line of penetration is a line which is intended to be a future main line in a colony or in a new country, but which is constructed of a lighter type in view of saving the original capital expenditure. I may very briefly add that my own view of that is that you should spend all your money in that case up to the formation level and have your track as light as possible, as you will no doubt have to replace it in twenty years, and make your buildings temporary and have no signals, make everything above formation level as cheap as possible. That is my idea of a line of penetration as a light railway.

Then there are the feeder lines, and they apply equally to densely populated countries and to colonial countries. They have points of similarity, although the method employed may be different. You have here a short line which can stand a higher tariff, but on which you must keep the capital cost down as much as possible, in order to save the interest charges on the small traffic. I think, therefore, if we discuss colonial railways only, the result will be to mix up the main line or line of penetration, with the feeder line which is an entirely different proposition, and to preclude a comparison between the methods adopted in densely populated countries and in colonial countries of handling the feeder proposition.

Mr. Teixeira (in French). — I do not wish to take into consideration what was decided at the Rome Congress, but it seems to me that judging from the re-



port now submitted to us that light railways and colonial railways should be considered separately.

In the Portuguese colonies we have both light and other railways, which is equally the case in other nations' colonies. In Angola, for instance, we have railways dealing with important traffic, and other lines which I should class as light railways. The weight of rails in the latter is only 15 kgr. per metre (30 lb. per yard) and the costs, especially for buildings, have been reduced to the strict minimum, and the staff engaged is only that which is absolutely indispensable and the terms for engaging the personnel are much less strict than elsewhere.

The colonial lines are practically main lines, and the so called light railways are feeders for the others.

Personally I think that the two questions should be dealt with separately.

**The President.** — The meeting should now decide on this point: Should the discussion be separated into two parts, one relating to light railways and the other to colonial and penetration railways.

**Mr. de Souza** (in French). — I do not think we should quibble over words, for we can very well examine the conditions on which secondary lines were established and afterwards see how the principle apply to the colonies.

Do not forget that there are light railways everywhere. As regards the colonies, I am firmly of opinion that in the first instance lines for development with feeders should not be laid down, but that it is better right from the first to put down light railways and later on, when traffic is on a good footing, the existing lines should be improved taking into account the knowledge that has been acquired of the true situation.

This happens often in Europe where this practice is followed, and the principles applicable for the establishment of secondary lines may, to a large extent, be applied to colonial lines.

**Mr. F. Level** (in French). — I am of opinion that the question put before us to-day has not even been asked, and also that no report on the subject has been submitted.

I remember quite well that at the Rome Congress one of our colleagues put the following question: « I should very much like that recommendations should be put forward and examined as to which is the best method for laying down lines for the development of new countries », and I lay special stress on the word « new ». As regards this I should be glad if our former President, Mr. Tajani, would say something.

For the present we do not want to know how light railways should be constructed, as this does not belong to the question, but which are the best steps to take in the first instance to establish railways for developing purposes *in new countries*, and I earnestly beg the Section not to trespass on other ground.

**The President** (in French). — I think that the confusion entirely arises from the difference in the two texts, English and French. The former speaks of « Methods of establishing light railways or lines for developing new countries », and the latter is entitled « Modes d'établissement des lignes économiques ou de pénétration dans les pays neufs ». There is a slight discrepancy in these wordings, which may explain the differences of opinions.

I call on Mr. Tajani.

**Mr. Tajani**, Federation of Transport, Italy (in French) — As former president

of this Section I wish to state my agreement with the view taken by Mr. Level.

The subject of light railways in general has been discussed at previous sessions, and the question which our Section at Rome intended to introduce is as follows : « What are the methods employed for establishing railways for the development of new countries? »

Amongst colonial railways there are important lines on which through trains run which may be compared with the great European systems, but colonial railways of this description are exceptional and should not be classed under the heading of light railways.

In my opinion the wording of question XIII is misleading, and instead of being given as « Methods of establishing light railways or lines for developing new countries », I think that the conjunction « or » is superfluous, and it would have been better to have simply stated « Methods of establishing light railways for developing new countries ».

All colonies possess railways run with slow trains with locomotives of small power. These railways may generally be classed as light railways.

The President. — After what Mr. Tajani has said we had better concentrate the discussion on light railways of penetration without however, forgetting certain points which are closely connected with light railways in general. (*Signs of approval.*)

We should, I think, now consider certain questions which have already arisen, *viz.*, those relating to speed and gauge. (*Renewed approval.*)

Mr. V. De Benedetti (in French). — I think that the choice of the rail gauge may be left to the discretion of the various States concerned.

I might say, however, that in Italy we

have adopted the 95 cm. (3 ft. 1 3/8 in.) or else the metre gauge (3 ft. 3 3/8 in.) nearly everywhere. Practice has proved that it is the best for light railways, and is perfectly adaptable for the development of traffic.

Mr. Van Leeuw, Ministry of Colonies, Belgium (in French). — The question of gauge depends a great deal on the country with which we are dealing.

In our Belgian Colony of the Congo we have adopted for the normal gauge, the 1 m. 067 (3 ft. 6 in.) gauge between rails, in order to connect our system with that of South Africa. The laying down of railways of this gauge, however, is too heavy when lines for developing purposes have to be considered. For one thing they may only have a short life, for it is impossible to foresee their future. From one day to another the industries or production for which the line was constructed may disappear. Labour may fail for various causes, such as sleeping sickness, etc., and it is for these reasons that this class of railway should be constructed as cheaply as possible. The most economical form is, in my opinion, that of the 60 cm. (1 ft. 11 5/8 in.) gauge, but at the same time it is necessary to avoid curves that are too sharp or gradients that are too steep, and in order to avoid the latter it is better to make the line somewhat longer than it otherwise would be.

At the present time such a line costs us about 60 000 fr. (£600) per kilometre.

Mr. Tajani (in French). — We think that the metre, or approximately the metre gauge, is the best for railways of this description. We recognise, however, that certain colonial lines of 60 cm. (1 ft. 11 5/8 in.) gauge have been found very suitable for the purpose in view.

The 95 cm. (3 ft. 1 3/8 in.) gauge

has been adopted in Italy, and I think the Congress might strongly recommend it, or one as nearly as possible to the metre (3 ft. 3 3/8 in.) gauge, for general use.

Mr. Van Leeuw (in French). — I should like to call the special attention of this meeting to the inconvenience caused by not having a uniform gauge for the various railways of Africa. In the Congo, for instance, we have four different gauges, 1 m. 067, 1 metre, 0 m. 75 and 0 m. 60 (3 ft. 6 in., 3 ft. 3 3/8 in., 2 ft. 5 1/2 in. and 1 ft. 11 5/8 in.). In East

Africa the Germans have adopted the metre gauge, whilst the English have adopted that of 3 ft. 6 in. In the North the French use the metre gauge, and also on the Ivory Coast, whilst in Morocco it is 0 m. 60 which they intend to increase to 1 m. 435 (4 ft. 8 1/2 in.).

I think the Congress should recommend that at least in Central Africa a standard gauge should be adopted.

The President (in French). — I now propose that the discussion be adjourned till this afternoon. (*General approval.*)

— The meeting rose at 12.15 p. m.

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Meeting held on 23 June 1925 (afternoon).

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Mr. G. SEMENZA, PRESIDENT, IN THE CHAIR.

— The meeting opened at 2.30 p. m. that are too sharp and gradients too

The President (in French). — We will proceed with the discussion where we left off, and I call on Mr. Teixeira.

Mr. Teixeira (in French). — I pointed out that in the Portuguese colonies we had agreed to adopt the 1 m. 067 and 60 cm. (3 ft. 6 in. and 1 ft. 11 5/8 in.) gauges — the first being reserved for lines of important traffic, and the second for those serving poor and desert country.

For this reason we have laid down 60 cm. gauge lines between the coast and the table land of Central Africa where the traffic is mostly light. Perhaps in the future we shall be able to substitute this by the 1 m. 067 gauge, but with the exception of certain lines, which will be transformed shortly, the traffic does not yet warrant it. We have already commenced the necessary preparations on the Mossamedes line and with this object in view care has been taken to avoid curves

steep. On the Mossamedes line for instance the maximum gradient is 1 in 40, and the maximum radius 328 feet.

If the 60 cm. gauge had not been laid down in the first instance the expense would have been excessive in countries where the traffic is still very much on the light side. In the old South West German Africa, which is now a British colony, the gauge was 60 cm., and the precautions taken as regards gradients and curves were much greater than those taken in the Portuguese colonies.

In my opinion these two gauges of 1 m. 067 and 60 cm. are quite right as far as colonies are concerned, the former being reserved for main lines and the latter for those of small traffic.

Mr. Goodship, Uganda Railway. — May I ask a question with regard to the matter of the difference in gauges? We know the gauges as 2 ft. 6 in. and 3 ft.



6 in. What do they correspond to with regard to metres and millimetres?

**The President.** — The English foot is equal to 0 m. 3048. I should remind you that Professor Tajani has suggested that the metre gauge should be recommended, and at the same time point out that there are colonial railways giving satisfactory results with the 60 cm. gauge.

**Mr. Tajani.** — I should like to make the suggestion I advanced this morning somewhat clearer, and wish to alter it as follows.

We might say that the adoption of the metre, or approximately the metre gauge, is advisable and state at the same time that narrower gauges, with a minimum of 60 cm., have given good results. I might add that it is desirable to keep to one gauge in the same geographical area.

**The President (in French).** — The discussion is now open to deal with Mr. Tajani's proposition.

**Mr. Van Leeuw (in French).** — I am wondering if there is not some misunderstanding. I think Mr. Tajani's idea is to adopt in the same geographical region, where traffic is great, the 1 m. 067 gauge, and that of 60 cm. in cases of less importance.

I quite agree with Mr. Tajani that the same gauge should be made general in any particular geographical area.

**Mr. Launay, French West African Railways (in French).** — We have standardised the gauge in French West Africa and have chosen that of one metre.

We foresee, however, that we might have important lines of quite a secondary nature with little traffic and which

would have to be built very economically. In such cases a very narrow gauge would have to be chosen such as 60 cm.

In fact we would follow the Portuguese method of laying down metre gauge lines where traffic is important, and 60 cm. for secondary or feeder lines.

We also believe in the adoption of a standard gauge for each class of railway in any particular district. Standardisation is particularly necessary with lines dealing with heavy traffic and likely to be in communication with each other.

The Portuguese delegate spoke of the 1 m. 067 gauge, and it was pointed out that it should not be confused with that of the metre gauge. In my opinion it is preferable to adopt the latter, which is intermediary between the 95 cm. (3 ft. 1 3/8 in.) gauge adopted by certain countries — Italy for instance — and the 1 m. 067 (3 ft. 6 in.) gauge in use on the English and Portuguese railways.

**Mr. F. Level (in French).** — Gentlemen, it is certain that the standardisation to which our colleague refers is very desirable, but I do not think that it is the business of the Congress to make any recommendation concerning it.

Though we are trying in our various countries to bring it about, it can only happen in a somewhat distant future. The question is not yet on the agenda, and I think I am faithfully expressing Mr. Tajani's meaning and that of the majority of our colleagues in the following text :

« Acknowledging that rail gauges as low as 60 cm. (1 ft. 11 5/8 in.) have been found useful in certain special cases, it seems that it would be advisable, always of course keeping standardisation in view, to recommend the gauge of approximately one metre for the development of new countries. »

Mr. Tajani (in French). — I quite agree with Mr. Level.

Mr. Launay (in French). — Would it not be possible to complete this suggestion with a recommendation of standardisation?

Mr. Van Leeuw (in French). — As regards lines laid down for developing purposes, it is necessary to devote a gauge that is narrower than that of main lines, for it must be as cheap as possible. When it is found that traffic warrants it the 60 cm. line can be replaced by that of one metre, which has already been done in Morocco.

I think it would be unwise to state definitely « that the metre gauge should be adopted for lines of penetration or developing purposes ».

Mr. Gillet, Bas Congo to Katanga Railway (in French). — It should be remembered that railways laid down for developing purposes are generally established in far distant regions where the transport of building materials is very costly. There are some districts where the cost of transport of a kilogramme of railway material is as much as a franc, and it is for this reason that in the first instance, a gauge must be chosen so that the line will not weigh more than 100 to 150 t. per kilometre on metal sleepers. From this point of view the 60 cm. gauge presents an enormous advantage, and I consider this the essential point.

The President (in French). — I think everybody would agree if we added to the text suggested by Mr. Level the following sentence :

« In cases where a narrow gauge is chosen we recommend that of 60 cm. (4 ft. 11 5/8 in.). »

Mr. Tajani (in French). — The 60 cm. gauge should be the minimum.

Mr. V. De Benedetti (in French). — In principle I agree with what Mr. Tajani says, but think that it should be stated that in those countries where the metre gauge is adopted it is advisable to use the 60 cm. gauge for secondary railways, and in countries where the main lines are laid down to the 1 m. 435 (4 ft. 8 1/2 in.) gauge the metre gauge should be the one chosen for the light railways.

I think the proposal which we are now discussing might be modified in this sense.

Mr. Launay (in French). — I beg to suggest a text to which I think we might all agree :

« The Congress calls attention to the great value from the point of view of inter-communication between railway systems of the adoption of one gauge only for each class of line laid down for developing purposes. »

For instance, the metre gauge might be adopted for the principal lines, and that of 60 cm. for secondary lines that had to be built economically.

Mr. Van Leeuw (in French). — I notice that we are coming back to the idea of standardisation which I think is wrong. If we had to re-commence the construction of an iron road in Africa, we should most certainly not adopt the 1 m. 067 (3 ft. 6 in.) gauge, but rather the European standard gauge of 1 m. 435 (4 ft. 8 1/2 in.) but the lines having been well established it is too late to change them now. Even in French Equatorial Africa, where it was intended at first to build the lines to the metre gauge, this was afterwards altered to 1 m. 067. If, therefore, we should decide on any particular standard gauge we should choose for Africa that of 1 m. 067 and no other.

Mr. F. Level (in French). — As regards the principle of the question, I am quite at one with my good compatriot Mr. Launay, but I think we are getting away from the real subject which is « lines for developing new countries ». It seems to me that the question of standardisation, however important it may be, should take second place. There is no doubt that if a light railway is being built in a new country it is better to adopt the gauge of a neighbouring line already in operation to which it might have to be joined later on. In such cases standardisation is desirable and the proper thing to do, but it is a question, till the time arrives, that might be left as a secondary consideration.

Mr. Launay (in French). — I quite agree that the suggestion I advanced was only the complement of a proposal which we were discussing.

The President (in French). — I think it preferable to split the question up. The remarks advanced as regards standardisation should be made the subject of a special recommendation (*approval*) and I beg Mr. Launay to be good enough to prepare a suitable text to bring it forward.

The following is the proposal that has been forwarded to the Bureau :

« Though we agree that gauges as low as 60 cm. have been made use of in certain special cases, we are of opinion that there is ample reason to recommend the adoption of the metre gauge (or approximately) for the development of new countries, and in cases where a narrow gauge is advisable that of 60 cm. should be used. »

Mr. Van Leeuw (in French). — Do you think it necessary to keep the first part of this recommendation?

Mr. Gillet (in French). — I think that instead of the words « special cases » it would be better to say « in many new countries with good results ».

Mr. V. De Benedetti (in French). — I beg to refer to the distinction I advanced just now, and point out that in countries where the metre gauge has been adopted for main lines it is advisable to use the 60 cm. gauge for the secondary lines, and where the former is 1 m. 435 to make use of the metre gauge for the lighter type of railway.

It is necessary also to consider the question of gradients and curves. This is very important, and I think should be mentioned in our resolution. It should be understood that, in the development of new countries with the 60 cm. gauge, no curves should be allowed with a radius less than 100 m. (328 feet) or gradients of less than 1 in 40. In this way it would be possible, when traffic increases, to substitute for this gauge the one adopted normally at the minimum of expense.

If, on the other hand, you have curves with a radius as low as 130 feet, you could not increase the gauge when the traffic had become sufficiently important.

For these reasons I think it necessary to mention curves and gradients in our recommendation.

Mr. Tajani (in French). — We should not only take the situation in Africa into consideration, but examine the question from a general point of view. I cannot, therefore, agree to the distinction made by my friend Mr. De Benedetti, and I fail to see why we should make a distinction between countries which have adopted the metre gauge for their main lines and those who for similar lines have chosen that of 1 m. 067.



We say in our text that « the 60 cm. has given good results in certain cases ». That is all that is necessary, and the distinction suggested by Mr. De Benedetti has no justification, in fact I should be glad, therefore, if the latter would withdraw his proposition.

Mr. V. De Benedetti (in French). — The question of gradients and curves, which I mentioned just now, is, I consider, most important.

It is possible on light railways using the 60 cm. gauge to have curves much less than 100 m. (328 feet) radius, but when laying down lines for developing new countries, it is not advisable to go below this figure, for you must take the increase of traffic into consideration and the consequent replacing of the 60 cm. gauge by the standard gauge.

The President (in French). — I wish simply to ask Mr. De Benedetti if he agrees that the question he has raised should be discussed later, because, in my opinion, it deals with another subject and should be discussed by itself.

Mr. V. De Benedetti (in French) repeated, using the same arguments, that in his opinion the question of gauges was intimately connected with curves and gradients, and it would be the proper thing to recommend, for the general lay out of light railways, the figures he had given.

Mr. Tajani (in French). — The question of gauge is incontestably connected with that of the radius of curves, but not necessarily with that of gradients. At the same time I think that the latter question is very interesting because in these days, where motor vehicles are serious competitors to our railways, it is necessary to construct the latter so as to carry the greatest loads at the minimum

of expense, which is not possible on steep gradients, as the tractive power necessary would be excessive.

Steep gradients should be avoided because they force us to reduce the loading, and this question is connected with that of the gauge.

I cannot, however, admit Mr. De Benedetti's proposal to fix the minimum radius at 100 m. (328 feet), because I think certain exceptions should be made. Even this morning our colleague from the Congo, where the 60 cm. gauge has been adopted, told us that it was necessary to consider the gradients and the structure of the rails, and by *adopting the narrow gauge it was possible to avoid excessive gradients.*

Let us be satisfied by saying that the 60 cm. gauge has, in certain cases, given good results, but that steep gradients should be avoided; as regards curves, it is as well to express ourselves more reservedly.

The President (in French). — So as to take into account the considerations which have just been advanced, I think it sufficient to add to the text I read, the following words : « and while providing for the other characteristics of the line, the possibility of adopting the metre gauge should be kept in view ».

The second sentence of the recommendation would therefore read as follows :

« In case a narrower gauge should be decided upon, the 60 cm. is recommended, and while providing for the other characteristics of the line, the possibility of eventually adopting the metre gauge should be kept in view. »

Mr. Tajani (in French). — I think I might give a summary of the debate as follows :

1) We recommend the metre (3 ft.

3 3/8 in.), or approximately the metre gauge for light railways developing new countries;

2) We acknowledge that the 60 cm. (1 ft. 11 5/8 in.) gauge has been used for colonial lines, and has, in certain cases, given good results;

3) We consider that in spite of the narrowness of the gauge steep gradients and sharp curves should be avoided as much as possible.

Do not let us forget the competition that has arisen from motor vehicles, and in consequence it is necessary that transport by railways should be effected at the lowest cost.

I beg my colleagues, therefore, not to attach too much importance to the question of narrow gauge and the practicability of sharp curves and steep gradients, for railways in certain cases can no longer face the competition of motor vehicles.

In recommending this I am not thinking of what might happen eventually in the ordinary course of things to the 60 cm. gauge, for very often the conditions in which the railway was laid down, in the first instance, would not permit of a change to be made.

I suggest, therefore, that this meeting should uphold these three principles, but I quite agree that the wording of the recommendation is not easy, and we should be justified in asking the Bureau to be good enough to submit a resolution embodying them as clearly as possible. (*Approval from several benches.*)

Mr. F. Level (in French). — In agreement with Mr. Tajani, I propose that the second sentence of the recommendation should read as follows :

« In all cases where it is possible we also recommend that curves and gra-

dients should be so arranged that the line may be easily altered to a wider gauge if the necessity arises later on. »

Mr. Beau, Island of Reunion Railway (in French). — As the question has arisen concerning the characteristics of the 60 cm. gauge, I should like to mention one item which has been completely overlooked.

In the report submitted to us reference is made to a new form of traction in use in various countries : South Africa, Uganda, Argentine Republic, etc. I am referring to the « road-rail » which as a new form of economical transport, offers possibilities which must be taken into account, but has not even been referred to in the discussion that has just taken place, and I wish to call the attention of the Bureau to this matter.

Mr. Thonet (in French). — Mr. Beau refers to one particular instance whilst Mr. Tajani refers to the 60 cm. gauge in general. Mr. Beau's very interesting observation should, therefore, be kept in mind.

The President (in French). — We certainly refer in our text to general cases, and if it is desired that a discussion on the subject of the « road-rail » should take place, we will take it into consideration.

Mr. de Souza (in French). — I wish to make a simple statement to the effect that we should not forget we are discussing the question as far as new countries are concerned, but the fact remains that nearly all these new countries have lines of standard gauge already. Brazil and Argentine are new countries and are both supplied with standard gauge railways.

Taking this into account I have written out the following statement, which I beg to place before the meeting.

« In addition to the lines already laid down in new countries, the gauge of which varies from one district to another, the adoption of a narrower gauge, even as low as 60 cm., may be recommended for developing purposes, on condition however that the small amount of traffic expected warrants this choice, as far as possible making arrangements for future widening if the conditions of the district allow this to be done. »

The President (in French). — I think the discussion is now exhausted. (*Yes, yes*), and I put the closure to the vote.

— The closure was then put to the meeting and agreed to verbally.

The President (in French). — During the debate the question of standardisation arose, and though I think we have no remit to study this question, which several institutions are interested in, I do not see that any harm would be done in making a statement as to the advisability of ultimately standardising lines, stock, etc.

It will ask, therefore, those members who raised the question to be good enough to prepare a text which will be submitted to our meeting to morrow morning.

Mr. Tajani (in French). — I beg to second the President's proposal.

The President (in French). — As regards the question of gauges I am inclined to prepare a definite text for a resolution, and which may be decided upon at our meeting to morrow morning. (*Approval.*)

This, therefore, will be arranged. We have now reached the question of the speed that should be allowed on light railways, and I call on Mr. Level to start the discussion.

Mr. F. Level (in French). — I have little to say as regards the speeds that should be adopted for light railways. Mr. Marriott says in his report :

... light railways should be classed in two groups as follows :

1. Lines with maximum authorised speed of 25 miles per hour.
2. Lines with maximum speed of 15 miles per hour.

I have already said that I cannot admit this distinction, for we know of light railways where the speed is considerably in excess of those given by the reporter, and are still classed as light railways. We should, therefore, put this distinction on one side. We are living in the age of liberty and have every reason to wish to remain there, and if we adopted the principles suggested it is greatly to be feared that the authorities would take advantage of the fact and impose conditions that would be prejudicial to the enterprise.

I ask, therefore, that this suggestion should not be agreed to, and that no mention of it be made in the summary.

Mr. Marriott, *Special Reporter*. — Gentlemen, in my report dealing with the question of speed I have quoted the recommendations of the Committee set up by the British Government to examine the whole question of the development of light railways, and that Committee thought that if the lines were classified, one with 25 miles per hour, and the other with 15 miles per hour — which my friend here has referred to — a classification of that kind would mean that the lower speed railways could be built more cheaply than the higher speed railways, and it was with the object of developing light railways in a cheaper form in Great Britain that they made that recommendation. Now in Great Britain we have a limitation of speed



imposed upon us by the Government as far as light railways are concerned. You say you have no such limitation. Well, you are fortunate. We have to work to our regulations laid down by our Government, and the only reason for bringing this in was to quote the views of this Committee — a very excellent committee and a very highly technical Committee — whose idea was to cheapen the cost of the light railways in Great Britain. They are rather expensive now, and we want to cheapen them, and one of their views was to reduce the speed and so to make the lines cheaper. That is all.

**The President.** — Gentlemen, will you allow me to say one or two words that will perhaps clear up the point in question. Mr. Marriott is speaking of light railways in Great Britain. Probably Mr. Level is thinking of light railways across the woods and the deserts, where the conditions are different, because here you meet automobiles and pedestrians, and out there you would meet nothing but tigers and snakes, and things of that kind, so that the distinction must be kept clearly in mind all the time.

**Mr. Thonet** (in French). — I agree with the opinion advanced by Mr. Level.

In Italy, for instance, 25 to 30 years ago, legislation fixed the maximum speeds on light railways at 12 to 15 miles per hour. The populations interested, however, were not satisfied and petitioned for higher speeds, and the Government was ultimately obliged to accede to their wishes and raise the speed then allowed to 25 miles per hour, and everybody was then satisfied.

To-day we have to consider the development of the traffic by motor vehicles which has already become a serious

competition to light railways. We have, therefore, every reason to free the working of our lines as much as possible, and I strongly appeal to my colleagues not to fix any maximum speed limit. We all understand and know full well that governmental authorities care very little for the economical result of our undertakings.

In order to regulate the allowed speed on our lines they would invoke the necessity of insuring the security of passengers and foot travellers. This consideration has certainly some weight, but the progress which has gradually grown in traction and operation permits without any doubt to exceed the limits which were formerly necessary. Evidently, our duty is to find out how to increase speed without, at the same time, neglecting the question of safety.

Three years ago, at the International Railway Congress in Rome, we refused to accept a speed limit for light railways, or be forced to adopt one system of brake power. Those who run the railways are better judges on these points than the authorities, because the responsibility lies with them.

I appeal, therefore, with Mr. Level that no definite rule shall be laid down in respect to this matter.

**Mr. V. De Benedetti** (in French). — I am also of opinion that it would be better not to touch on the subject of speed on light railways. I adhere, therefore, to the very sensible remarks made by Messrs. Level and Thonet.

The explanations which Mr. Marriott has just given us allow me to think that he will not insist on his suggestion. The measures taken by the Italian Government, and referred to by Mr. Thonet, were specially enacted to safeguard the interests of the travelling public both by

foot and rail, so were completely justified.

We are now only dealing with colonial railways so need not, as far as they are concerned, fix any maximum speed.

Mr. F. Level (in French). — Our good friend, Mr. Marriott, has just spoilt one of my most cherished illusions. I always believed that in Great Britain existed the greatest freedom in the world. I now find that, as far as the subject with which we are dealing is concerned, we have far more liberty in France. (*Laughter.*) Allow us to congratulate ourselves most heartily and stick to it.

Mr. De Benedetti has told us that we are only discussing colonial railways. So far we have done nothing else, and I have suggested that the question of speed should not be referred to in the summary, for I have pointed out the danger there would be in doing so.

I belong to a country where it is said that motor cars go too fast and railways too slowly. The control service is always urging us to go faster, and when we do not fall in with their views it is because we know that it is not practicable or profitable to do so. As far as this is concerned, we have absolute liberty, and I believe it is the proper thing to allow perfect freedom to colonial enterprises. If we forced them to accept a maximum speed our control service might retort by saying you have fixed such and such a speed for the colonies, why should you exceed it in Europe?

I sincerely hope that all my colleagues will agree with what I have said.

Mr. Jacobs, National Society of Light Railways, Belgium (in French). — I beg to state that I perfectly agree with the remarks made by Messrs. Level and Thonet.

At the present time we are trying to persuade the Belgian Government to increase the speed now allowed of 18.5 miles to 31 miles per hour. The control does not allow us the liberty that exists in France, and we are under very strict supervision. The competition of motor vehicles being now a very serious matter it is necessary that, as far as possible, all hindrances to our legitimate work should be put a stop to, and that is why we do not believe in any speed limitation.

It is true that we are speaking of new countries, but if we put a limit on speeds in our colonies, the control services might say that *a fortiori* in Europe we should not exceed the limits that have been fixed for them.

The President (in French). — I see that the meeting is quite in agreement that no speed limit should be recommended.

I propose that as it is now somewhat late we should postpone our discussion till to morrow. (*Agreed.*)

— The meeting rose at 4.40 p. m.

Meeting held on 24 June 1925 (morning).

Mr. G. SEMENZA, PRESIDENT, IN THE CHAIR.

— The meeting was opened at 9.35 a. m.

The President (in French). — We will proceed with the discussion on question XIII.

It was understood yesterday that the Bureau would place before you a summary containing the various suggestions made at the meeting which I will now give you and on which you are expected to come to a decision :

« Whilst acknowledging that narrow gauges of less than a metre have been successfully used in several cases, the Congress is of the opinion that for light railways in the colonies the best general gauge for developing purposes should approximate 1 m. (3 ft. 3  $\frac{3}{8}$  in.).

« In cases where special conditions make it advisable to adopt a narrower gauge, then that of 60 cm. (4 ft. 11  $\frac{5}{8}$  in.) appears to be the best, keeping in view the question of curves and gradients and less accentuated limitations than those which this particular gauge allows. »

Mr. Gillet (in French). — I agree in principle with the text submitted by the President, but should like to see added to it a sentence stating that laying down curves of large radius must not lead to exaggerated cost, which would take away all the benefit derived from the use of the 60 cm. gauge.

Mr. F. Level (in French). — As far as I am concerned I have no objection to the suggestion made by our colleague, but should like a little alteration made to the wording of the proposal, to which might be added the following words :

« in every way that is practically possible according to the financial means at disposal ».

This addition is easy to understand. No doubt when the 60 cm. is chosen the question should be asked if it is desirable to have easier curves than those that could be used for this form of gauge. Anyway it is in my opinion right to take into account the financial side, and profit by the advantage that might be gained in certain cases by laying down less sharp curves.

That is the reason why I propose to add to this recommendation the words : « as far as it is practically possible with the disposable funds ».

Mr. Van Leeuw (in French). — The 60 cm. gauge does not allow of steeper gradients but sharper curves.

The President (in French). — The text I read to you does not mention gradients, but says « keeping in view the advisability of curves with large radius... ».

Mr. Gillet (in French). — I agree with Mr. Level's amendment.

Mr. Van Leeuw (in French). — It should, however, be added that gradients should be as easy as possible.

Mr. F. Level (in French). — It might be added « that on the other hand gradients should be made as easy as possible ».

Mr. V. De Benedetti (in French). — I think we should state things more clearly and say in which countries the 60 cm. gauge should be made use of.

The formula used « in cases where



special conditions... » appears to me to be too vague. If you do not wish to name the countries the formula might at least be altered to « in certain countries ».

The President (in French). — This is only a question of detail. In order to meet the wish expressed by Mr. Van Leeuw we might add to the text I read, the following sentence :

« As regards gradients, it would be advisable to reduce them to the strictest minimum. » (*Marks of approval.*)

Mr. Gillet (in French). — To which might be added « compatible with local conditions ». (*Renewed approval.*)

The President (in French). — I put therefore the following text to the vote :

« While recognizing the fact that gauges of less than 1 m. have been adopted in many countries and have given good results, the Congress is of opinion that a gauge of about 1 m. is to be recommended for pioneer railways in new countries.

« In cases in which special conditions lead to the adoption of a narrower gauge, the 60 cm. gauge is recommended with curves of larger radius than the minimum that can be used for this gauge so far as the financial conditions permit. It is also recommended that the gradients be kept down to the strict minimum compatible with the local conditions. »

— This wording was agreed to unanimously.

The President (in French). — We will now pass to the second point. Mr. Launay has handed me the following text :

« The Congress calls attention to the great convenience from the point of view of inter-communication that would arise from the adoption of one gauge only for

each type of line laid down for the purpose of developing new countries. »

Mr. F. Level (in French). — I fail to see the necessity of having one uniform type for each class of railway. It is much more important to provide a uniform type for each region. Would it not be simpler to say : « The Congress calls attention to the convenience that would arise from the adoption of a standard gauge for each region? »

Mr. Belpaire, *Principal Secretary* (in French). — Mr. Level did not say that he wished to standardise the gauge in each region. He made it clear yesterday that in each district there are generally two gauges, one for main lines and the other narrower for feeding lines.

The President (in French). — Yes, the two texts are totally different. That of Mr. Level signifies that it would be best to have one gauge only in any particular district which is not what Mr. Launay meant.

Mr. Van Leeuw (in French). — I beg to call attention to the considerable advantage which would accrue to neighbouring countries if they could come to some agreement on the subject of gauges. I therefore propose the following text :

« The Congress calls attention to the considerable advantage there would be for neighbouring countries to agree to use the same gauge for those lines which are likely to be connected sooner or later. »

The President (in French). — In reality Mr. Van Leeuw's text is the same as that of Mr. Launay. The latter, however, is slightly more general in his wording. I will read it again :

« The Congress calls attention to the great advantage it would be from the inter-communication point of view to

adopt one gauge only for each class of line laid down for developing purposes. »

We are now faced with two projects for our decision, one of which refers to inter-communication in the future, and the other which recommends a uniform gauge for the same district. It is on this point I think that our decision will have to be taken.

Mr. Tajani (in French). — The Congress ought to say that it is advisable for States to agree to adopt one gauge only in the same geographical region. Both for economical and technical reasons such an agreement is very desirable.

When we wished to connect up certain of our lines with those of Austria we were faced with many difficulties from this very reason of differences in gauges. The difference was not great, being in one case 1 m. (3 ft. 3 3/8 in.) and in the other 1 m. 10 (3 ft. 7 1/4 in.) but it prevented the two lines being coupled up. The Congress should most certainly express the hope that the different countries, possessing colonies in the same geographical area should agree to adopt the same gauge.

Mr. Teixeira (in French). — I entirely agree with Mr. Tajani's opinion, and believe that it is absolutely necessary for neighbouring countries to adopt the same gauge in the same geographical region.

In our colony of Angola the government had to take steps to alter the gauge of our line which is to join that running towards the Katanga, and the 1 m. 067 (3 ft. 6 in.) gauge has been made to replace the initial gauge of 1 m. (3 ft. 3 3/8 in.). There are some districts which cannot be developed unless they are connected directly with the coast, and if the lines in the interior have not the same gauge as the coastal lines, a proper connection is impossible.

It is, therefore, a very important matter, and nothing should be neglected in order to arrive at an agreement as suggested by Mr. Tajani.

Mr. F. Level (in French). — If I looked at the matter from a purely commercial point of view it is certain I should agree completely with Professor Tajani. We are discussing, however, the question of « railways laid down for developing new countries », and we cannot guess the reasons that might induce our respective governments to lay down any particular line in their scheme for developing. There may be certain precautions to be taken of which we know nothing.

I ask, therefore, if we are really qualified to give in this domain, recommendations which, allow me to say, are rather more political than technical. There are reasons which are likely to escape us for which one country thinks it better to adopt a different gauge to that of its neighbour, so I do not think it comes within the province of a technical congress to make recommendations of this kind. All we can say is that from a commercial point of view the standardisation of gauges in a same geographical region would be an advantage.

Mr. Gevaert (in French). — I cannot at all agree with Mr. Level's view.

Our conference is not a diplomatic conference, but a technical one. We are here to formulate recommendations, and it is for the governments to become acquainted with and examine them in order to decide if our suggestions coincide with their politics, and they will be faced with two interests — commercial and political — which may be opposed to one another. They will have to decide finally between these two interests.

We deal exclusively with the technical and commercial points of view, and

I think we are perfectly qualified to give, quite independently and without bothering with the political side of the question, a recommendation of the kind which is now before us, and leave to the different governments the task of deciding to what extent they can fall in with our views.

Mr. de Souza (in French). — I wish to make some remarks on the example referred to by Mr. Teixeira.

We have constructed in Angola three kinds of lines for developing purposes :

1) A line with the 1 m. (3 ft. 3 3/8 in.) gauge, and which is 400 to 500 km. (250 to 300 miles) long;

2) Later we built another line intended to be coupled up with the Central African system, and we adopted the 1 m. 067 (3 ft. 6 in.) gauge;

3) Finally, we have a line constructed under more modest conditions, the gauge of which is 60 cm. (1 ft. 11 5/8 in.).

We have already in view the building of other lines connecting up the first two lines mentioned above, and the first of these lines that of the metre gauge, must be coupled up to lines of other colonies. You will see from this how gravely awkward it is not to have a uniform gauge.

We have not to occupy ourselves with diplomatic questions — let Mr. Level be re-assured on that point — and this need not be considered at the present time, for we keep ourselves exclusively on technical and commercial grounds.

I conclude by saying that I am perfectly satisfied with the text as originally drawn up; it is arranged in sufficiently general terms, and I beg all my colleagues to agree to it.

Mr. G. Ottone, Federation of Transport, Italy (in French). — I think we might

make the recommendation more precise by stating that we look at the question only from technical and commercial points of view, and all considerations of a military or political order are excluded.

Mr. V. De Benedetti (in French). — I agree with the arguments advanced by Mr. Gevaert, and beg to add that considerations of a political nature have not prevailed, in Europe, and have not prevented inter-communication between the large railway systems. I believe, therefore, it would be easy in the colonies to come to some agreement regarding the standardisation of each type of line laid down for developing purposes.

Mr. Mellini, Sardinian Light Railways (in French). — I also agree with the proposal that has been made, and to those considerations which have developed in support of this recommendation I beg to add the following : Those lines which are principally intended to become great railways are on the point of developing to a great extent in Africa, and it is wise to bear this in mind and influence the various States having interest in the matter to arrange as much as possible for inter-communication between the various systems.

We have a line in Lybia which cannot be coupled up to the Tunis Railways because of the difference in gauge. We know perfectly well, therefore, the importance of the question, and hope that the proposal made will be accepted by all our colleagues.

On the ground of technical and commercial points of view we should state that the standardisation of the gauges is very desirable.

Mr. F. Level (in French). — We agree from the technical and commercial points of view.



**Major Griffin, Iraq State Railways, Mesopotamia.** — Mr. President and Gentlemen, I agree with the importance of bearing in mind when arriving at the gauge to be adopted in any one case, the effect of inter-communication between neighbouring countries but in this resolution so far I have seen only a mention of the question of gauge. Now, in my opinion, the gauge alone will not, of course, render inter-communication possible. There is the question of your fixed and your moving dimensions. I speak on behalf of a country in which we have the 1 m. gauge, and on that 1 m. gauge the standard dimensions are varying now, and are likely to vary more from, for instance, the Indian Railways, and, without bringing into the resolution the question of the moving and fixed dimensions the mere question of gauge will not of itself render inter-communication possible.

**The President.** — What do you propose, Major Griffin?

**Major Griffin.** — I propose in the resolution that you should simply add to the question of the gauge, « and the moving and fixed dimensions should be such that inter-communication should then be possible ». Perhaps we might say : « The standard dimensions should be adopted », which comprises both the fixed and moving dimensions such as the height of the buffers, and so on.

**Mr. Thonet (in French).** — It is obvious that if we recommend standardisation of rail gauges we should also recommend the standardisation of other elements such as loading gauges, couplings, etc.

I should also like to support the remarks made by Mr. Gevaert for I think we are perfectly qualified to advise those

governments interested. It is evident that we should only deal with the technical and commercial sides and not touch on political or military considerations, which is a matter for the governments to consider afterwards.

**Mr. F. Level (in French).** — I agree with all my colleagues on the principle of the question, and we may say that the standardisation of the gauges is desirable from the technical and commercial points of view. Our governments are the only judges as regards political reasons which may induce them not to allow our suggestions to be put to practical use.

**The President (in French).** — The closure has been asked for, and as I cannot think for the moment of a suitable text containing the ideas on which we are all agreed, I think it would be better to ask a few members to be good enough to make themselves responsible for the wording of this recommendation. (*Approval.*)

**Mr. Thonet (in French).** — It is understood that it will not only be a question of the rail gauge, but also of the loading gauges, couplings, etc.

**The President (in French).** — I agree, and call upon Messrs. Level, Tajani, Thonet and Launay to kindly put together a text to present to the Section.

The recommendation will be submitted to you at the earliest possible moment.

**Mr. Marriott** asks me to arrange for a discussion on point 4 of his report.

Has anyone any observation to make on the subject?

**Mr. Marriott, Special Reporter.** — In my report there are descriptions of various new kinds of traction, that is to say, we have described, as the result of the questionnaire, the Decauville system in

South America, and the « road-rail » system, which has been tried in various parts of the world already, and with regard to which there is a demonstration track at Wembley Exhibition, which you can see for yourselves, and another system called the « rutways ». My suggestion is that you should take note of all those new forms of traction and make a suggestion in your resolutions that those should be reported upon by some one at the next meeting of the Congress at Madrid. I think a very great deal has happened since we last met in regard to the evolution of these new methods of traction, and we ought to take note of them. That is simply the object of the resolution as it stands at present.

Mr. Beau (in French). — Yesterday I called the attention of the meeting to the question of the « road-rail » system, of which mention is made in the reports on questions XIII and XV.

The reporters are not completely in agreement as to the results of this new system of traction, and, in fact, General Mance writes in his report :

As a result of a careful study of the conditions in East Africa, the opinion has been expressed, contrary to the claims of the company, that the cost, both of construction and operation of a « road-rail », with a 4 % ruling grade, is somewhat higher than that of a 60 centimetre (1 ft. 11 5/8 in.) light railway on 3 % grade.

It would be interesting to know what Mr. Marriott thinks of the matter.

Mr. Marriott, *Special Reporter*. — The quotation which the interpreter has just dealt with is from General Mance's report. That paper is not before us at the moment. In my paper I have simply inserted the views given to me by those who are responsible for the production

of the machine; they are not my own views, and I am in no way responsible for them. I have no axe to grind — as we say in this country — for the « road-rails » or for any other system, but I have simply produced the information given to me, which is quite *ex parte*, and I cannot accept any responsibility for one system or the other. All I urge is this, that we have information about these systems, and my suggestion was that we should take the information as given to us and test it for ourselves, and report the results at the next Congress.

Major General Sir H. F. E. Freeland, Bombay, Baroda & Central India Railway. — Mr. President and Gentlemen, I have read with much interest the carefully considered and valuable report on this question drawn up and circulated for the Congress by Mr. H. Marriott and there is no doubt that the subject merits extensive examination by all those, who for one reason or another are endeavouring to conceive means of transport in localities where the establishment of heavily equipped standard railways are financially impossible.

I would not venture to speak on this subject were it not for the fact that I have had intimate knowledge and recent experience in India of the difficulty of providing means of opening up new country and bringing fresh traffic to our existing railways there. We have many projects, and with very few exceptions they have very little chance of maturing unless the costs of material and labour are reduced far below their present figures. There is not much hope of that. At the instigation of the Railway Board (that is the Government of India Railway Board) all the agents in that country — Railway Managers — are busy recasting their feeder railway schemes in the hope

that some means may be found of laying lines which will pay their way from the date of opening or soon after. The fact is that the existing railways, by dint of heavy expenditure on renewals and improvements, have now reached a capacity where the traffic offering can be dealt with adequately. The question then is : Are we to go on improving the capacity and spending more capital to that end, in the hope that the resources of the locality served will expand proportionately or must we retard capital expenditure on existing lines? It is not easy to answer this question, but one thing seems quite certain, and that is that, with the immense untapped resources of that country, the best way to ensure a greater traffic on the existing railways is to build more feeder lines and open up undeveloped country at a distance from the main lines too great for road cartage.

But we have yet to discover a standard of railway construction and equipment, which, while improving on the bullock cart in the matter of speed, reliability, distance hauled and cost of transport will be sufficiently cheap in installation and operation to provide a reasonable return on the capital cost.

The Government of India are alive to this state of affairs and, greatly as we all desire to construct our feeder railways on the same gauge as the lines they serve, in order to avoid transshipment, such a desideratum is rarely practicable at present day costs when it is a virgin country that is to be pioneered. So we are faced with the necessity of a light railway or tramway of such a gauge and standard of construction and equipment, as will only involve a capital cost commensurate with the traffic to be carried.

The great danger, I think, of constructing feeder railways on a gauge different from that of the lines they serve is that

as the traffic increases so will the capacity of the feeders be improved till the day comes when they become in reality standard gauge lines in miniature, and finally, when they cannot carry any more traffic without being doubled, any attempt to convert them to a broader gauge is doomed to meet with so many difficulties that it is better and cheaper in most cases to build entirely new standard gauge lines on fresh alignments. We have had several experiences in that direction.

As quoted by Mr. Marriott the Light Railway Commissioners in Great Britain stated their opinion that one of the chief reasons why light railways had not been constructed to a greater extent in rural districts was that in the past we railway men had been endeavouring to maintain standards of speed and service akin to those adopted on the main lines, whereas light railways were in an essentially different category and could only succeed if emancipated from the main line conception of construction and operation. The inference is that they maintain that, if we will be content with a lower rate of speed and with less in the way of refinements — to put it generally — there is no real reason why we should not attract more capital into the light railway investment field, and pay a reasonable interest on the undertaking.

I think we must all admit that, quite apart from the high cost of land and the burden of taxation, a well laid solid looking track laid on a good sound bank well above any flood level, so as to be open to traffic under all conditions, is the pride of the railway engineer. He insists too on ballast of a high grade and uniform consistency, packs his road with care, so as to ensure smooth running, and drains his formation to keep the road in



good condition during heavy rain. His alignment is selected so as to obtain the maximum of straight road and the minimum of grade and sharp curvature, and the result is long high banks and deep cuttings, to say nothing of bridges and tunnels. The road must be fenced also, to prevent the accidents which will occur with and to fast trains, owing to pedestrians and cattle straying on to the line, and it must be equipped with level crossing gates and gate lodges. Communication between stations will certainly be provided by means of telegraph, and perhaps telephones as well. Stations will be interlocked and fully fitted with signals, necessitating in many cases signal boxes and communication thereto with the station master's office or control. Platforms for passengers and goods are considered a *sine qua non*, to say nothing of goods sheds, passenger waiting halls, booking offices and the like. Briefly that is the railway picture, and we have in process of time come to accept all these things, not as refinements, but as essential to any railway. In fact before the Government inspector will permit a line to be opened, he will in most countries consider all this standard of equipment necessary for the safety and convenience of those using the railway.

But the bald fact is that we cannot afford these things, and, as a result, no light railways commensurate with requirements are being constructed.

We hear of ambitious schemes for colonising and developing the « open spaces » of the world and there is no doubt that there are plenty of men available and anxious to break new ground, if only they can be assured that the produce they grow or the mineral they win from the earth can be placed, without heavy cost and in good season, on the market. Thus « settlement » of undeve-

loped countries is mainly a question of men and transport, and the latter should precede the former.

Thus it behoves all of us railway men to give this problem our earnest consideration, even though we shall be called on to abandon our ideals in the process. For my own part, I have spent some years examining the various systems of transport, light railways and tramways in particular, and I am not without hope that there is a means at our hand to attain the end in view. There are of course, several types of country to be considered, and they may be roughly divided into two classes, namely, the flat open country, where a maximum gradient of 1 in 100 can be obtained without heavy cost and curves of 150 feet radius need not be exceeded, and the rough semi-mountainous or undulating country, where, if heavy expenditure is to be avoided grades up to 1 in 25 and curves as sharp as 50 feet radius must be employed. For the former it is debatable whether light Decauville railways, with their adhesion locomotives or tractors, or the « road-rail » system of traction referred to by Mr. Marriott in his paper (and dealt with extensively by Mr. Alexander Galbraith in *Modern Transport*, 12 April 1924) are the most suitable. For the latter there is not much doubt that the « road-rail » system promises best. Some experience of construction costs has been obtained in India recently, where three « road-rail » lines have been sanctioned as feeders to the Bombay, Baroda and Central India Railway. The first in the Rajpipla State in Western India was opened for traffic in March last. It is built on the 2 ft. 6 in. gauge with a ruling grade of 1 in 40 and curves of 80 feet radius. It is a forest line over very rough country, where no roads exist. Stone ballast for

the wheelways was found close at hand, and a considerable portion of the alignment passes over black cotton soil. The country being very broken and subject to heavy rainfall considerably greater expenditure on waterways was necessary beyond what is normally sufficient. The equipment in rolling stock was one tractor and twenty trucks, one of which is fitted as a brake van and another for carrying passengers. The total capital cost of construction and equipment for the first seventeen miles worked out to 24 000 rupees (that is £1 600, with the £1 at 15 rupees) per mile, of which the formation and waterways accounted for about one-third, and the permanent way (18 lb. track on jungle wood sleepers) for another third. If the whole twenty-six miles projected had been opened the cost per mile would have been reduced slightly and, furthermore, the locality through which the line runs being exceedingly malarious and sparsely populated, all labour had to be imported and frequently changed, thus adding to the construction costs.

The second line is under construction in Gwalior State territory, and is a 2 foot gauge line, 42 miles in length, laid with an old 24 lb. rail and second-hand steel sleepers removed from the Gwalior State Railway main line. It is estimated that the cost of this permanent way will be about the same as for the 18 lb. road, with which it was originally intended to lay the line. The alignment is a very easy one and follows the road, being laid on the road embankment, which has been widened where necessary. By this means the road bridges and culverts have been utilised — in most cases without widening — and cost reduced accordingly. There are two large waterways to be crossed — the road now passes them by fords — and the State

has decided to carry the road, as well as the « road-rails », over them by bridges. The maximum gradient does not exceed 1 in 50, and the sharpest curve is of 100 feet radius. The soil is for the most part black cotton, but not very deep; stone for the wheelways is found in the locality traversed, but has to be transported several miles. Moorum for top dressing the wheelways is also plentiful.

The use of the road bank in this case is convenient, as the road serves to feed the « road-rails » all along its length; there is at the present time considerable traffic in cotton, grain and seeds along this road in carts, and road maintenance is very heavy; this traffic will now all go to the « road-rails » and the upkeep of the road will be greatly reduced. The rolling stock equipment consists of three tractors and about forty trucks, some of which are fitted with moveable seats and canopies for accommodating passengers.

The total cost per mile of this line was estimated at 20 000 rupees (that is £1 333, with the £1 at 15 rupees), of which the formation and waterways only account for about one-fifth, and the permanent way for about one-third. The first 28 miles of this line were nearly finished in April and the cost worked out closely to the estimate, and includes rolling stock equipment.

Both the above lines have been supplied with double-ender steam tractors weighing 9 ton gross, with 3 1/4 tons on the driving wheels, and the balance distributed between the front and rear bogie trucks, which run on the rails. The tractive effort of these tractors is slightly over 3 000 lb. with a 9 tooth sprocket, and the engine revolutions at 260 per minute. The speed of the train is limited to 15 miles an hour maximum, and it is expected that a through speed

of 8 to 10 miles an hour will be obtained when the wheelways have become well consolidated. There is no night running, and the equipment is very light in the matter of stations, buildings and the like — in fact all the refinements of a railway have been eliminated, the rail track even being unballasted, except on very soft ground and at points and crossings. There are no signals and no fencing, nor have telegraph or telephone communications been provided — everything very light — quite contrary to general railway ideas.

As compared with the estimated cost of broad (that is, 5 ft. 6 in.) gauge and 1 m. gauge lines, and leaving the rolling stock out of consideration, it is found in practice that the « road-rails » can be constructed in India at a cost of £1 400 per mile in difficult and £1 100 per mile in easy country, as against £3 700 per mile for a light metre gauge and £6 000 a mile for a light broad gauge line. We do not know much about working expenses yet, in fact the only official records I can find are those published in Uganda for the year 1923. There it was found that the cost per mile per annum of maintaining track and wheelways for a traffic of 12 000 tons was £30 per annum or £2 10 s. a month, in spite of the fact that very untoward weather conditions existed. Their experience has lead them to believe that unnecessary apprehension exists as to the difficulty of maintaining these wheelways, which were in far better condition at the end of the year than at the beginning.

As also the number of men employed on a « road-rail » line for operating will be considerably below that required under railway operation conditions, it may safely be assumed that the working rates will be comparatively low.

I hold therefore that it is sounder

practice to open up country in the vicinity of existing standard gauge lines by « road-rails » or tramway systems rather than by means of railways of a different gauge from the existing lines, because the « road-rails » or tramways are too crude to warrant their being improved, as regards speed and refinements, beyond a point where a light railway line of the same gauge as the existing line can be justified. When that point is reached it should be the policy to replace the « road-rails » or tramway by a light standard gauge railway and move the equipment and track of the former to some locality further afield.

The President. — I beg to thank General Freeland for the very interesting communication he has been good enough to give us.

As an excursion has been arranged for this afternoon, I think it better to disperse now. A summary of General Freeland's report will appear in to-morrow's *Daily Journal*.

Do we all agree? (*Yes, yes.*)

This discussion will be continued to-morrow morning.

Mr. F. Level (in French). — Before the rising of the meeting will you kindly allow me, Mr. President, to read the suggested resolution which I have prepared with the collaboration of Messrs. Thonet, Tajani and Launay.

This is the text :

« From the technical and the commercial points of view it is desirable that in neighbouring countries the main and secondary pioneer railways should adopt the same characteristics for their fixed installations and for their rolling stock. »

Mr. De Benedetti (in French). — I ac-



cept this text for the present, but hope to increase its scope at a future Congress by a recommendation in favour of standardisation.

The President (in French). — I do not

think this is the time to make a declaration on this important subject.

The discussion will be continued to-morrow.

— The meeting rose at 11.30 a. m.

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**Meeting held on 25 June 1925 (morning).**

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**Mr. G. SEMENZA, PRESIDENT, IN THE CHAIR.**

— The meeting was opened a 9.30 a. m.

The President (in French). — Having to be at the Crystal Palace this afternoon several members have asked that the meeting to-day at 2.30 p. m. should be cancelled. I suggest that this be agreed to, and the morning meeting continued till one o'clock, so that we need not return this afternoon. (*Agreed unanimously.*)

Very well we will arrange accordingly.

We will now continue our discussion on « Methods of establishing light railways or railways for developing new countries ».

Before reading the recommendation that Mr. Level handed in at the conclusion of the meeting in his own name and that of several of his colleagues, I should say that we ought to have begun the discussion of question XIV this morning, so I must ask you to proceed with our deliberations as quickly as possible :

« From the technical and the commercial points of view it is desirable that in neighbouring countries the main and secondary pioneer railways should adopt the same characteristics for their fixed installations and for their rolling stock. »

It seems to me that the discussion on this subject is now exhausted.

Mr. Bals, Roumanian State Railways

(in French). — I agree with this wording, but think that it might be possible to add to the recommendation, « as regards those parts which have a bearing on the inter-communication of railways ».

Mr. F. Level (in French). — The authors of this recommendation have agreed that the wording should be in absolute general terms, and the object aimed for is to bring inter-communication between railways of each kind within the range of possibility.

I do not think it necessary to make it clearer than it is.

The President (in French). — Mr. Bals considers that a distinction should be made between the characteristics which have a direct bearing on inter-communication and those which have no importance from this point of view. This distinction is implicitly included in the recommendation, the main object of which is precisely that of standardisation which should favour inter-communication.

Mr. Reis, Ministry of Industry, Communications and Public Works, Brazil (in French). — We are agreed that the usefulness of assuring inter-communication between railways should be definitely stated. This standardisation is necessary, not only on account of the tech-

nical and commercial points of view, but also from the financial point of view. The construction of main and secondary lines requires a large capital, and it is quite natural that we should do all we can to increase the efficiency of our lines, and inter-communication is one of the methods.

In my opinion it should be pointed out in the text that this standardisation should be brought about within the limits of financial possibilities.

**The President (in French).** — The remarks of Mr. Reis are quite pertinent. I should, however, point out that the suggestion has already been taken into account in the recommendation agreed to yesterday, in which it is stated « with the financial means at disposal ».

I therefore put to the vote the following recommendation :

« From the technical and the commercial points of view it is desirable that in neighbouring countries the main and secondary pioneer railways should adopt the same characteristics for their fixed installations and for their rolling stock. »

— This was unanimously agreed to.

**The President.** — A summary of Mr. Freeland's remarkable report has appeared in both the English and French editions of our *Daily Journal*, and I do not think it necessary to give a translation of it. (*No, no.*)

Does anyone wish to speak on the subject?

If no one wishes to make any remarks we will pass on to another point.

**Mr. H. A. Watson, London & North Eastern Railway,** submitted to the meeting the following proposals :

« The section wishes to call the attention of the Congress to a side issue of light railways, which has not been re-

ferred to in any of the reports, *viz.*, to the methods that should be adopted to deal with traffic that is of small importance on branch lines of normal gauge, and which does not exceed, or is likely to exceed, that which might be dealt with by light railways. There are many cases of such lines which are actually working without profit, and which, under the present system, cannot be altered; the Section therefore suggests that a report dealing with the question should be submitted to this Section of the Congress. »

**Mr. Marriott, Special Reporter.** — Major Watson is an old colleague of mine, and I know that he is particularly interested in this subject in his present capacity, and I think that I should be voicing his views if I asked you, Sir, to take note of this proposition, and to record it on your notes of proceedings, with a view to its being brought to the notice of the Permanent Commission as a suggestion for consideration at the next Congress. I think that is as far as you can go at present, because it is not on the agenda and it is not embraced within the limits of my paper.

**The President.** — Gentlemen, I submit to you the question whether you think that this proposal should be put forward to the Permanent Commission in order that they should see if it is a case for having a report on this subject for the next Congress. I take it that everybody is agreeable to that procedure.

**Brigadier-General H. O. Mance.** — Might I suggest that this motion should be brought forward after the paper on « Traction for light railways », question XV. Perhaps after the discussion on that paper we might be able to put forward something a little more comprehensive as regards an arrangement for the subjects for the next Congress.

The President (in French). — I think we can very well agree to the suggestion of General Mance, reporter of question XV. (*Approval.*)

This will, therefore, be adopted.

The Secretary calls my attention to the last suggestion contained in Mr. Marriott's report :

4. The examination and trial of some of the new methods described in the reports and results should be reported on at a future meeting of the Congress.

Shall we decide to issue a recommendation that a report be presented on this subject to the next meeting of the Congress? (*Yes, yes.*)

I consider, therefore, this recommendation as having been adopted, and it only remains for me to warmly thank Mr. Marriott for the excellent report he has favoured us with. (*Loud cheers.*)

Mr. Marriott (*who was received with applause*). — I thank you very much, Mr. President. Now, Gentlemen, if you will kindly excuse me, I am a joint secretary as well as a reporter, and you all know what that means, that there are a great many things to be attended to even now, so I will withdraw and come down whenever I can to join in your discussions.

## DISCUSSION AT THE GENERAL MEETING

Meeting held on 27 June 1925 (morning).

THE RIGHT HON. VISCOUNT CHURCHILL, PRESIDENT, IN THE CHAIR.

GENERAL SECRETARIES : SIR HENRY FOWLER and Mr. P. GHILAIN.

Sir Henry Fowler, *General Secretary*, read the final summary adopted by the 5th Section.

— This final summary gave rise to no discussion.

The President. — The final summary is therefore as follows :

### Final summary.

« While recognizing the fact that  
« gauges of less than 1 m. have been  
« adopted in many countries and have  
« given good results, the Congress is of  
« opinion that a gauge of about 1 m.  
« (3 ft. 3 3/8 in.) is to be recommended  
« for pioneer railways in new countries.  
« In cases in which special conditions

« lead to the adoption of a narrower  
« gauge, the 60 cm. (1 ft. 11 5/8 in.)  
« gauge is recommended with curves of  
« larger radius than the minimum that  
« can be used for this gauge so far as  
« the financial conditions permit. It is  
« also recommended that the gradients  
« be kept down to the strict minimum  
« compatible with the local conditions.

« From the technical and the commercial points of view it is desirable that  
« in neighbouring countries the main and  
« secondary pioneer railways should  
« adopt the same characteristics for their  
« fixed installations and for their rolling  
« stock. »

— The General Meeting ratified this final summary.



## QUESTION XIV.

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### CONCESSIONS FOR LIGHT RAILWAYS.

*Relations between the concessionnaires of light railways and the authorities granting the concession.*

*Economic and financial administration.*

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#### Preliminary documents.

Report by Messrs. P. BIRAGHI and P. LO BALBO. (See English edition of the *Bulletin*, April 1925, p. 851, or separate issue [with red cover] No. 31.)

Special reporter : Dr. P. LO BALBO. (See English edition of the *Bulletin*, June 1925, p. 2155.)

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## DISCUSSION BY THE SECTION

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Meeting held on 25 June 1925 (morning).

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Mr. G. SEMENZA, PRESIDENT, IN THE CHAIR.

The President (in French). — We will now begin the discussion on question XIV.

I will call upon Mr. Lo Balbo to read a summary of his report.

Mr. Lo Balbo, *Reporter* (in French). — The question of concessions for light railways was considered at the 1905 Congress from the point of view of the financial assistance afforded by the State and the localities interested in the development of these railways of secondary importance.

On that occasion a remarkable report was presented by Mr. Colson, Vice-Pre-

sident of the Permanent Commission of the Congress <sup>(1)</sup>.

Mr. Colson discussed in a most convincing manner the different types of association between railway companies and the conceding powers, and at that Congress the following statement was adopted <sup>(2)</sup> :

Light railways merit in the highest degree the attention of public authorities. Their construction makes it possible to

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<sup>(1)</sup> See *Bulletin of the Railway Congress*, October 1904, p. 1151.

<sup>(2)</sup> See *Bulletin of the Railway Congress*, February 1907, p. 247.

encourage the progress and development of districts which previously have remained in the background, and it is accordingly not only the interest but the duty of the governments to assist them. It is desirable, therefore, not to adhere to old types and old methods of construction, operation and regulation, but to introduce every facility possible, so as to adapt them to local needs and available resources. It is also desirable that State governments and local authorities should accord to light railways, either under the form of subsidies, relaxation of requirements or other methods of assistance, the support which they need, both for construction and for operation, so that all parts of the country may be adequately served.

When the authorities of a country do not themselves construct or work light railways, and turn them over to private companies, it is indispensable that the terms of the concession should be so defined as to harmonize the interests of the working company with those of the public.

Consequently it is found that, as light railways are generally of local interest, it is generally the local authorities which assume the initiative for their construction. Thus the provinces, departments and communes are usually the prime movers, while the State also renders certain assistance.

The question of deciding whether, and if so within what limits, the State should grant financial assistance to light railways is generally settled according to the degree of utility of the railway enterprise or of the tramway system to the public.

The concession of light railways is now being examined by us from the point of view of economy and finance.

A report has been presented by Mr. Biraghi and myself. This report

examines the laws and general conditions of construction and working of light railways, and specially points out what the conceding powers have done either at the expense of, or in favour of, such lines during the years of the war and since the war.

Here are a few details regarding the legislation on this subject in force in the different countries :

*Italy.* — The royal decree of 9 May 1912 consolidated in a single text the provisions in force regarding the concession of railways to private enterprise and also dealt with tramways.

As regards subsidies, before the war the yearly subsidies had reached 15 000 fr. per kilometre. At present the figure is 50 000 fr., and even 58 000 fr. in the case of electrified lines, per kilometre and extending to fifty years.

These subsidies have greatly encouraged the development of light railways in Italy, with the result that at the present day there are 12 500 km. (7 770 miles) of line working under concessions to private enterprise, as compared with about 16 500 km. (10 250 miles) of line operated by the State.

The categories of subsidies granted by the State to operating companies were increased during the war and the years following the war, and recognition has even been given to the principle of granting *extraordinary operating subsidies* in cases where the other forms of financial assistance are considered inadequate or inapplicable.

It must be recognised that it is thanks to these important subsidies that the light railway industry in Italy (an industry which is highly necessary to the national life, and which brings an immense amount of traffic on to the main railways operated by the State) has been able to continue to exist, and has even been able in the end to return to almost normal conditions.

If we consider for a moment the conditions in which the light railway industry finds itself in Italy at present, an industry which suffered heavily from the war and from the resulting vicissitudes, we shall conclude that it is permitted to look forward to the future with confidence and to hope that the light railway industry, after passing through a critical period for so long, will regain strength and once more develop on satisfactory lines.

*Belgium.* — It is now forty years since Belgium effectively and simply solved the problem of light railways: concessions have been granted to the « Société Nationale des chemins de fer vicinaux » (National Society of Light Railways), which is in the nature of an association of State, provinces, communes and private individuals, whose object is the construction and operation of light railways intended to facilitate inter-communal communication and, in particular, to link up rural localities with commercial or industrial centres.

The concessions granted to this Society are, like the Society itself, of unlimited duration. Concessions granted to other bodies than the Society may not be for longer periods than ninety years, and the State may at any time repurchase the concession on the conditions laid down in the deed of concession.

The State (the conceding power) shares in the profits, according to statutory regulations, on the same basis as the other shareholders (provinces, communes, private individuals).

*France.* — The law of 12th July 1865 laid down the first set of regulations for the construction and operating of light railways.

From 1865 onwards the light railways in France developed rapidly. This development was further encouraged by the law of 11th June 1880, which instituted a system of annuities in place of the capital subsidies hitherto granted by

the State. This law stipulates that in no case subsidies, added to the working profits, exceed a return of 5 % on the initial capital. The amount of the annuity varies according to working results so as to give a fixed return on the capital, which means that the lines are worked under a system which guarantees a fixed rate of interest.

Quite recently a new financial system has been applied by the conceding powers in France, as a result of the economic disorganisation experienced in the post-war period. This system is known as « Régie désintéressée ».

An example of such a system is that in force on the Railways and Electric Tramways of the Bouches-du-Rhône. The financial features of the system are those of which I have just spoken.

*Swiss Confederation.* — The concessions granted by the Confederation carry no obligation on its part to participate financially in the construction or operation of the railways. On the other hand, the Confederation has on two occasions granted a federal subsidy to the Grisons canton for the establishment of its network of narrow-gauge railways, because this network has made possible considerable economies as regards postal transport in the Grison Alps. Financial assistance is, however, afforded in all its forms by the cantonal and communal authorities.

The Confederation has no participation in receipts or profits of the concessionary railways.

The steps taken by the Confederation with a view to alleviating the crisis in the transport industry have been different, however, as regards railways of local interest. In the first place financial assistance is provided for (in the case of enterprises with a budgetary deficit) by virtue of a federal decree of the 18th December 1918.

Further, the federal law of the 2nd October 1919 sets out the conditions under



which financial assistance may be accorded to private railways worked by steam traction which may desire to change over to electric traction.

Certain fiscal concessions have been granted, and in particular exemption from the war-tax as regards that part of share capital which receives no dividend.

*Holland.* — Generally speaking, the light railways have been constructed without Government subsidy, but with considerable subsidies from the provinces and communes concerned.

*Norway.* — In several cases the Government has granted to light railways assistance representing approximately half the estimated cost of construction, less the cost of ground and banking of the permanent way.

Of this Government subsidy, one-half is often advanced against shares in the railway, the remainder being in the form of a non-repayable credit running without interest, against a mortgage on the railway property. The Government subsidy is not forthcoming until the remainder of the capital has been subscribed or guaranteed by the communities concerned.

When the State grants such a subsidy, it participates in profits in proportion to its contribution, *i. e.* according to the number of shares it receives.

*Czechoslovakia.* — A distinction must be made between railways constructed after 1922 and railways conceded prior to 1922. The former are constructed exclusively as State railways, at the expense of the State, whose participation amounts to at least 30 % of the initial capital.

Railways constructed under concessions granted on former Hungarian territory before the revolution were constructed without the direct financial participation of the State. The State financed local railways by operating, maintaining and controlling them, in re-

turn for a fixed share (from 40 % to 60 %) of the gross receipts.

The communes, like the State, took a financial share in the construction of light railways on former Austrian territory, either by acquiring shares, or by guaranteeing interest on capital.

*Japan.* — The whole of the net working profits belong to the operating bodies; the conceding powers have no share in such profits. These powers do not intervene in the relationships between the companies and their staff; their right of control is limited to financial and technical questions of operation.

One important form of financial assistance granted by the Government consists in permanent exemption from certain tolls, and in exemption for the first three years from the « turnover » tax.

When the State itself operates a line parallel to a private line, it considers the degree of prejudice suffered by the latter as a result of the competition, and as a consequence either buys out the private line or indemnifies it.

The duration of concessions is not fixed; it may therefore be considered as indefinite.

*Canada.* — The authorities which authorise construction take no part financially either in the construction or in operating. Formerly the provinces sometimes granted facilities (concession of land) to lines considered as being of economic importance.

Another form of assistance was the payment of a cash subsidy, either as a lump sum or so much per mile constructed. A further form consisted in the guarantee given by the Dominion or by a province in respect of mortgage debentures to be issued by the railway company. This guarantee consisted in assuring the payment of capital and 4 % interest.

This system of guarantees was instituted in 1896. The guarantees covered

the cost of construction of lines in the mountainous regions of British Columbia where such cost could be considered as equivalent to double the amount of the guarantee.

In general there is no provision for the participation of the Dominion or of the province in working receipts. On the other hand, however, public taxes chargeable on such receipts take priority over all other charges.

Mr. President, Gentlemen,

The report which Mr. Biraghi and I have the honour of presenting does not comprise any conclusions, but a final summary may be given.

It is indeed difficult to express any general opinions on this question, as the procedure followed in the different countries varies according to the particular conditions of each country.

I think, however, that we may conclude with the following summary :

« I. — For the construction and operation of light railways financial aid on the part of the conceding powers is necessary.

« II. — The conditions of construction and operation should be such as to be compatible alike with the interests of the concessionnaires and the requirements of the public. As a general rule it is necessary that the conceding powers should allow the maximum of facilities and flexibility so that it may be possible to carry out the construction economically and to ensure simple, economical, commercially sound and rational operation.

« III. — Except in cases where an equitable arrangement has been arrived at, new lines should not be burdened with free or semi-free services, the cost of which should be borne by the conceding powers, since they would have continued to pay for such services if the new lines had not been constructed.

« IV. — The principle of the participation of the State in the gross receipts of light railways being irrational from the point of view of operation, and opposed to the public interest, should no longer appear in the legislative enactments. » (*General applause.*)

The President (in French). — I would like to thank Mr. Biraghi and Mr. Lo Balbo for the clear and helpful report prepared by them on the question of concessions for light railways.

I would especially thank Mr. Lo Balbo for the very complete and lucid summary which he has just put before us.

Before opening the discussion on this question I think it may be advisable to read the final summary prepared by Mr. Lo Balbo. It is as follows :

« I. — For the construction and operation of light railways, financial aid on the part of the conceding powers is necessary.

« II. — The conditions of construction and operation should be such as to be compatible alike with the interests of the concessionnaires and the requirements of the public. As a general rule it is necessary that the conceding powers should allow the maximum of facilities and flexibility so that it may be possible to carry out the construction economically and to ensure simple, economical, commercially sound and rational operation.

« III. — Except in cases where an equitable arrangement has been arrived at, new lines should not be burdened with free or semi-free services, the cost of which should be borne by the conceding powers, since they would have continued to pay for such services if the new lines had not been constructed.

« IV. — The principle of the participation of the State in the gross receipts of light railways being irrational from

the point of view of operation, and opposed to the public interest, should no longer appear in the legislative enactments. »

I propose that we take these four paragraphs one by one. (*Agreed.*)

**Mr. Navarro**, Portuguese Colonial State Railways (in French). — I may mention that a law passed two years ago in Portugal grants to our light railways a status analogous to that of the Belgian Provincial Railways. Up to the present, however, the Government has not put this law into operation.

It is not necessary for me to recall to you the regulations applying in the case of the Belgian Provincial Railways : you are all familiar with them.

May I in closing express the hope that in the future the railway companies and governments will give a more detailed reply to the questions which are presented to them. In this manner the task of the Congress will be greatly facilitated.

**Mr. Beau**, Reunion Railway, Reunion Island (in French). — I think the wording of the first paragraph is a little too categorical. It reads : « For the construction and operation of light railways, financial aid on the part of the conceding powers is necessary. » In some cases, however, the operation of a light railway is both advantageous and remunerative. The financial assistance of the State is not, therefore, always indispensable.

I propose that we replace the words « is necessary » by « is generally necessary ».

**Mr. Ravenek**, Ministry of Waterstaat, Netherlands. — Mr. President, if you will permit me I would like to give some details to supplement the report with

regard to Holland. That report mentions only the law of 1879, and states that these light railways are subjected to numerous regulations that are a serious obstacle to their rapid development. I am glad to say that this statement is no longer correct. The law of 1879 has been replaced by the laws of 1889, 1900 and 1917. Generally speaking, the local railways are brought more and more under the general Railway Law of 1875, whilst their maximum speed is gradually brought up to 60 km. (37.3 miles). In fact, there is now little difference between the legislation for these local railways and that for the main railways. The principal difference is that the local railways are not as a rule enclosed. As to the question of operation, experience in my country has proved that this must be in the hands of the great railway companies.

With regard to the tramways, these were for the first time brought under certain articles of the general Railway Law of 1875 in 1900. In particular, they were subjected to the supervision of the State and in 1917 their inclusion in the general law was extended and Royal consent was made obligatory, so that on the one hand more rigid regulations were enforced on behalf of safety of service, while on the other hand the tramways were freed from the varying and often vexatious regulations of local authorities, and the maximum speed may be increased to 45 km. (28 miles). A special law of that year laid the power to give permission for the construction of tramways alongside highways, in so far as the latter are not controlled by the State, in the hands of the provincial authorities. This has proved a great boon to the tramways.

Moreover, the State has largely helped in the construction of tramways by



granting loans bearing no interest to the Companies, to an amount equal to that subscribed. In one case, that of the tramways in the Province of Limburg, the whole capital of the company was subscribed by the communities, the Province and the State. Under these conditions the network of tramways in Holland has been greatly extended, and now comprises a total length of 3 000 km. (1 864 miles).

Mr. Launay, French West African Railways (in French). — I agree with what has been said by Mr. Beau. Like him, I consider that the wording of our first paragraph is a little too categorical. It must not be forgotten that the construction of certain light railways may be very remunerative, and that there are cases where the financial assistance of the State is not called for.

Instead of saying that « financial aid on the part of the conceding powers is necessary », we might say : « financial aid on the part of the conceding powers is generally desirable », or « generally necessary », if the Section prefers the wording suggested by Mr. Beau.

Mr. V. De Benedetti, Ministry of Public Works, Italy (in French). — The Reporter has very ably condensed the regulations adopted by the various countries in regard to concessions for light railways. These regulations, however, apply to all railways, without distinguishing between light railways and other railways.

Under certain circumstances a line may be constructed and operated « economically », though such line may not be what is described as an « economic » or light railway. In such a case the financial assistance of the conceding power is no longer indispensable.

I consider that the paragraph should be worded as follows :

« For the construction and operation of light railways the conceding powers may, if necessary, grant financial assistance. »

Mr. Lo Balbo, *Reporter* (in French). — The Congress has endeavoured at previous sessions to arrive at a definition of « economic railways ». I agree that it is not easy to find a definition which is entirely satisfactory. We may say, however, that we regard lines of local interest as « economic railways ».

It is, therefore, local authorities which must ordinarily take the initiative in their construction. The intervention of the State follows at a later stage.

To what extent must the conceding powers participate? We can lay down no hard and fast rules in this connection. Everything depends on the degree of utility of the line conceded, on the profits accruing, and on the benefit to the community in general.

Mr. Thonet, Tramways of Lombardy and Romagna, Italy (in French). — I think we are all agreed in accepting the wording proposed by Mr. Beau. It meets Mr. De Benedetti's point. It is desirable that the conceding powers should provide financial assistance, but we cannot say that this financial assistance is indispensable in all cases.

Mr. Bouteau, General Provincial Railways Company, France (in French). — I think, Gentlemen, that it is necessary to distinguish between the construction and the operating of light railways.

So far as operation is concerned, I am in favour of Mr. Launay's proposed text : in this case the financial assistance of the conceding powers is generally indispensable. As regards initial construc-

tion, it appears to me that the conceding power must necessarily provide financial assistance. As far as construction is concerned, therefore, we might adhere to the positive statement.

Mr. F. Level, General Company of Local Railways, France (in French). — I wish to support the proposition of Mr. Beau and Mr. Launay, and I suggest the following wording :

« For the construction and operation of light railways financial aid on the part of the conceding powers is generally necessary. »

Mr. de Souza, Ministry of Commerce and Communications, Portugal (in French). — I am in favour of the text proposed by the Reporter. In reality the expression « est généralement indispensable » is practically synonymous with « s'impose ».

My reason for wishing to speak was to draw your attention to the following point : the authorities too often forget the support which they owe to light railways; they are ready to make great sacrifices for the construction of highways, but when it is a question of light railways they prove less open-minded and less generous. Light railways are, however, means of communication, just as much as highways.

In Portugal subsidies are rarely granted to light railways. As for those which are laid alongside highways, they even have to contribute towards the upkeep of the highway.

Mr. Van Leeuw, Ministry for the Colonies, Belgium (in French). — Would it not be useful to add the words « in some form or other » after the words « the necessity of financial aid »?

Up to the present I have not heard any reference to one particular form of assis-

tance on the part of the conceding power : the Belgian Government, for example, guarantees a fixed rate of interest on the debentures and shares issued by the light railway companies of the Congo. The Government eventually recovers the advances made, by way of participation in the excess profits, the remainder of the profits going to the shareholders.

Mr. Bouteau (in French). — The financial assistance of the State is justified not only by the fact that the light railways render great service to the population, but also because they are collectors of taxes for the government's account. The State maintains the national highways, and it derives no revenue from automobile transport. On the other hand, it benefits from taxation on the passengers whom we carry. It is therefore logical that it should be compelled to grant financial assistance when a light railway is to be constructed.

As regards operation, financial assistance by the conceding power is not entirely indispensable. I therefore adhere to my proposition.

Mr. F. Level (in French). — I am in entire agreement with my friend, Mr. Bouteau, when he says that as regards the construction of light railways financial assistance from the State is necessary.

I think, however, that we ought to accept the wording proposed by Mr. Beau and Mr. Launay, which modifies somewhat that proposed by Mr. Lo Balbo. If I propose that we make no distinction between construction and operation, it is in order that the effect of the expression of opinion may not be further weakened.

In my opinion we should say that financial assistance by the conceding powers is generally indispensable for the construction and for the operation of light railways. (*Signs of approval.*)

Mr. Bouteau (in French). — I am prepared to accept the wording suggested by Mr. Level.

Mr. V. De Benedetti (in French). — It is obvious that we cannot separate construction from operation. It is the latter which provides the means to cover the cost of construction. Consequently, if we say that it is indispensable for the conceding power to help in financing construction, we must say the same when we are considering operation.

The financial help rendered by the conceding power must be based on a scheme which embraces both construction and operation : the two are inseparable.

Several members. — Closure.

The President (in French). — Closure having been demanded, I will put it to the vote.

— The motion for closure is adopted by a majority of votes.

Mr. Launay (in French). — Before we vote on the text I would like, with the President's permission, to remark that the cost of construction constitutes in effect a charge on the enterprise just as in the case of working expenses. It is not, therefore, possible to separate the two : construction and operation. As it is permissible to assume that a line may be remunerative, let us use a general formula, such as the following :

« For the construction and operation of light railways financial aid on the part of the conceding powers is generally necessary. »

The President (in French). — I will now put to the vote the wording proposed, on which I think we are all agreed :

« For the construction and operation

of light railways financial aid on the part of the conceding powers is generally necessary.»

— This paragraph is put to the vote and adopted.

The President (in French). — We will now take the second paragraph of the text proposed by Mr. Lo Balbo :

« II. — The conditions of construction and operation should be such as will allow the interests of the concessionnaires to harmonise with the requirements of the public. As a general rule it is necessary that the conceding powers should allow the greatest amount of flexibility and freedom so that it may be possible to carry out the construction economically and ensure simple, economical, commercially sound and rational operation. »

This paragraph is now open for discussion.

Mr. F. Level (in French). — I think we should all wish to compliment Mr. Lo Balbo on the excellent report he has given us. (*Hear, hear.*)

I am convinced that none of us will have any objection to the wording of this second paragraph. I think, however, that we might usefully supplement it by means of a further paragraph, which I will read to you presently.

Will you permit me to read to you a paragraph adopted at Rome in 1922 by the 5th Section, whose task it was to deal in particular with the working conditions of employees? It is as follows :

As regards the adoption of a general method for working these lines, it is important to remember the great differences between the conditions of labour on main lines and subsidiary systems.



It is, therefore, desirable that Government intervention, when necessary, should be carried out with extreme care in order to avoid raising working expenses to an impossible point. The satisfactory working of the lines can only be carried out by giving the Companies the utmost possible freedom in such matters as the fixing of rates and fines, etc.

That is the text adopted at Rome.

You are all aware that the law regarding the eight-hour day has considerably hampered railway operations. This very day, in another Session of the Congress, a discussion is proceeding on this question, and you know that it is only with great difficulty that it is possible to draw up a text acceptable to everybody. You know also that this law has done us a great deal of harm. An official, whose courage we must admire, has said that the law regarding the eight-hour day was the greatest catastrophe which has befallen the world since the declaration of war in 1914. I think we all share this view.

I think, therefore, that it would not be without value to add to Mr. Lo Balbo's paragraph a second paragraph as follows :

« In this connection the Congress draws attention to the findings adopted by the Rome Congress in 1922, which showed clearly the great differences that existed between the working conditions of the employees on main and light railways, differences that must be given the greatest consideration if the working of light or secondary railways is not to be rendered impossible. »

Mr. Launay (in French). — I am heartily in agreement with the complimentary remarks which Mr. Level has

just addressed to the Reporter, Mr. Lo Balbo.

I would ask leave to propose an amendment to the text proposed. After the words « As a general rule it is necessary that the conceding powers should allow the greatest amount of flexibility and freedom » we might add : « compatible with safety ».

Mr. de Souza (in French). — The paragraph contains the words : « to ensure simple, economical, commercially sound and rational operation ». I do not see the necessity for this sentence. It appears to me that the words « and rational operation » would comprise all the rest.

Mr. Debarsy, Belgian National Light Railways (in French). — Mr. Level has just told us that a « courageous » official has expressed the opinion that the eight-hour day is the greatest cataclysm which has afflicted humanity since the declaration of war in August 1914. I believe a certain number of the delegates present share this view. It may perhaps, however, be permitted to a « courageous » delegate to suggest in this meeting that there is no need for alarm as regards the application of the law regarding the eight-hour day. (*Laughter.*)

Doubtless certain attenuations are necessary in practice in the interests of the service and of the public; but the law regarding the eight-hour day has had useful results, and does not deserve the opprobrium attached to it by Mr. Level.

I think we may agree to the wording proposed by Mr. Level, but it was desirable that in this debate the voice of a supporter of the eight-hour day should make itself heard to protest against the adulation of this official, who has been more than « courageous ». (*Renewed laughter.*)

The President (in French). — The wording proposed by Mr. Level is as follows :

« In this connection the Congress draws attention to the findings adopted by the Rome Congress in 1922, which showed clearly the great differences that existed between the working conditions of the employees on main and light railways, differences that must be given the greatest consideration if the working of light or secondary railways is not to be rendered impossible. »

Do you not consider it would be better to use the word « imperilled » rather than « rendered impossible »?

Mr. F. Level (in French). — We might use the word « compromettre ». (*Signs of approval.*)

The President. — Are we agreed as to replacing the words « rendre impossible » by « compromettre ». (*Yes, yes.*)

I take it therefore that this amendment is adopted.

I will now put to the vote the second paragraph proposed by the Reporter, with the additional paragraph proposed by Mr. Level.

— The second paragraph, thus amended, is adopted.

The President (in French). — We now come to the third paragraph :

« III. — Except in cases where adequate compensation is made, the new lines must not be burdened with a load of services, free or at reduced tariffs, the cost of which should fall upon the conceding powers who would have to bear them if the light railways were not constructed. »

Mr. V. De Benedetti (in French). — I do not think we ought to enter into

details. The services referred to, namely the transport of mails and the granting of free or half-fare tickets to employees and certain categories of passengers are dealt with in certain countries by special legislation.

I propose, therefore, the deletion of the third paragraph, particularly as its underlying idea is already contained in the second paragraph.

Mr. Van Leeuw (in French). — I am in favour of retaining this paragraph. In our colony the light railways are compelled to provide all sorts of free transport : mails, officials, missionaries, etc. If the State desires to grant favours to certain passengers, let it grant the company a subsidy in proportion to the services rendered.

I propose that the paragraph be put to the vote as it stands.

Mr. de Souza (in French). — I also am in favour of retaining this paragraph.

The State endeavours to obtain the maximum possible advantages when granting the concession for a light railway : transport of mails, reduced fares or free tickets for certain officials, etc. All this means a heavy burden for our light railways. I could quote to you the case of one light railway which is even being pressed to provide special mail vans. This is going too far.

The principle contained in this third paragraph must be put on record. I would like the Section to take a decision on this point.

Mr. V. De Benedetti (in French). — I consider this paragraph unnecessary, especially as the ground is already covered by the second paragraph. You have asked that you may be afforded « the maximum of facilities and flexibility ». Is not that sufficient?

In the first paragraph you have said that « for the construction and operation of light railways, financial aid on the part of the conceding powers is generally indispensable ». It appears to me that the charges which the public authorities will impose upon the concessionnaires, in the shape of transport, free or at reduced tariffs, will be determined when the concession is granted, and that the authorities will take these charges into consideration in fixing the amount of the financial assistance to be afforded.

I adhere, therefore, to my proposition that the third paragraph be deleted.

**Mr. Vallecchi, Federation of Transport, Italy** (in French). — I am in favour of retaining the third paragraph as proposed by **Mr. Lo Balbo**. It is indisputable that the conceding powers constantly endeavour to obtain new favours from the companies : free or semi-free transport, both for passengers and for goods. We see a continual struggle in progress between the conceding powers and the companies.

I am therefore in favour of the retention of the third paragraph.

**Brigadier-General H. O. Mance, Permanent Commission.** — I would like to extend the scope of paragraph III so as to demand the suppression of the uneconomic special rates which are sometimes imposed by the authorities for the sake of subsidising certain industries. In such cases it is the railway which is being compelled indirectly to subsidise such industries. Charges of this nature obscure the true working results of a transport undertaking. It must be made perfectly clear that if a government desires to subsidise a particular industry, it should do so directly and not in a disguised way through railway rates.

**Mr. Thonet** (in French). — I agree absolutely with the opinions expressed by the last two speakers.

We must retain this paragraph, because the charges which public authorities impose upon the concessionnaires are really excessive. It must be remembered, further, that our services have to meet competition by motor-bus services, to which the public authorities grant all sorts of facilities. At the present time we are proposing to electrify certain existing light railways in Spain (without any subsidy from public authorities) in order to meet the ever increasing competition of motor-bus services. We must obviously take every possible step to compete with this new means of transport, which ought to bear certain taxation in order to compensate for the damage caused to roads, and should be subjected to regulations as regards circulation, time-tables and tariffs, as is the case with the light railways which make use of the roads.

I therefore support the third paragraph as proposed by **Mr. Lo Balbo** and supplemented by **General Mance**.

**Mr. Launay** (in French). — May I make one remark with regard to what has been said by **General Mance** on the subject of rates?

Governments may be compelled, in the public interest, to require reduced rates for certain products, particularly when it is necessary to encourage the economic development of a region, as for instance in new countries.

**Mr. F. Level** (in French). — I agree entirely with the preceding speakers. I would like to add that a large number of our lines are faced with the competition of the suburban services of the main railways. In France we suffer severely from this competition. Under



pressure from the public authorities the main railways organise suburban services with extremely low rates, and the resulting competition is a serious thing for us.

I consider, therefore, that we should adopt the paragraph proposed by Mr. Lo Balbo, and even supplement it by referring to motor-bus services and the suburban services of the large railways.

**Mr. Jacobs**, Belgian National Light Railways (in French). — I support the arguments put forward by Mr. Level, because in Belgium the burdens to be borne by the light railways are constantly increasing. Recently, for example, we have been asked to provide free transport not only for employees of the telephone and telegraph services, but also for their material, including telephone and telegraph poles. (*Laughter.*)

The Post Office even wished to compel us to fetch the mail bags from the post offices, but this we have refused to do. At the present time we have 27 different types of tickets which entitle the holders to travel free or at reduced fares. You need to be a clever man to be a conductor on our trams. (*Laughter.*) I say nothing about the facilities we are compelled to afford in the matter of military transport.

The burdens imposed on light railways are nothing less than crushing, and it is for this reason that I ask the Section to adopt the third paragraph contained in the excellent report prepared by Mr. Lo Balbo.

**Mr. V. De Benedetti** (in French). — I regret that my proposition does not meet with support.

I do not consider it desirable to enter into details, and I continue to urge the deletion of this paragraph.

The competition of motor-bus services

has been put forward as a counter-argument. I agree with Mr. Level and Mr. Launay on the point of fact, but I must suggest that there is a means of avoiding this competition: let the light railways apply for concessions for running motor-bus services. In this way they will get rid of the competition. It would be desirable that preference should be shown to light railway companies when concessions for motor-bus services are granted.

I know that my proposition will be lost. It will, however, be on record in the minutes.

**Mr. Van Leeuw** (in French). — I cannot admit Mr. De Benedetti's argument, namely that the third paragraph is implicitly contained in the second paragraph. We must be more explicit.

As for that put forward by Mr. Launay, namely that governments may find it desirable to encourage the development of certain regions, and for this purpose impose more favourable rates, this argument is really in favour of the retention of the paragraph. If a government resorts to this expedient, it is because it believes that the region concerned will benefit thereby; but it is certain that the government's view will not be shared by the railway company, as otherwise the company would have every interest in lowering the rates itself, and would do so. If, therefore, a government compels a company to adopt lower rates, I consider the company should be equitably compensated in return.

I trust that this paragraph will be adopted by the 5th Section.

**Mr. F. Level** (in French). — I propose that the text submitted by Mr. Lo Balbo be supplemented by the following paragraph:

« Attention should be drawn to the

disastrous effects upon the interests of the light railways brought about by the development of motor-bus services and by the very considerable reductions in rates in suburban areas which the main railways are able to make owing to subsidies received directly or indirectly from the public authorities. »

Mr. Vallecchi (in French). — I cannot agree to the paragraph which Mr. Level has just proposed.

I would refer to the attitude recently adopted by the Italian Government : concessions for motor-bus services are granted in such a way as to avoid this competition with light railways. Further, I have heard Mr. De Benedetti state this morning that our Government is willing to give preference to light railway companies when it is a question of granting concessions for the establishment of motor-bus services. (*Laughter.*)

Mr. V. De Benedetti (in French). — Excuse me, I did not say that.

Mr. Vallecchi (in French). — At any rate, I do not consider it desirable to include the paragraph proposed by Mr. Level, and I shall vote against it.

Mr. V. De Benedetti (in French). — May I be allowed to remark that the opinion which I expressed with regard to the granting of motor-bus concessions to light railway companies is entirely a personal one, and in no way binding on my government.

The President (in French). — I think we might now close this discussion. (*Unanimous signs of approval.*)

— The discussion is therefore closed.

I now put to the vote the paragraph proposed by the Reporter as follows :

« III. — Except in cases where ade-

quate compensation is made, the new lines must not be burdened with a load of services, free or at reduced rates, the cost of which should fall upon the conceding powers, who would have to bear them if the light railways were not constructed. »

— The paragraph was adopted, with two dissentients.

The President (in French). — I now put to the vote the additional paragraph proposed by Mr. Level, which paragraph has been read out to you by our colleague.

— The addition proposed by Mr. Level is adopted. (Mr. V. De Benedetti abstained from voting and Mr. Vallecchi voted against adoption.)

The President (in French) — We will now take the fourth paragraph of Mr. Lo Balbo's final summary :

« IV. — The principle of the participation of the State in the gross receipts of light railways being irrational from the point of view of operation, and opposed to the public interest, should no longer appear in the legislative enactments. »

Mr. Level will now speak.

Mr. F. Level (in French). — I apologise for entering once more into the discussion. This time I am not proposing an addition to the text put forward by the Reporter : on the contrary I propose the deletion of this paragraph.

It appears to me that, after having asked the conceding powers for their financial aid, it would scarcely be fair to deny them any share in the profits. It would not be equitable, the day we had attained a condition of prosperity, to say to the State who had helped to put us

on our feet : « We do not owe you a penny. »

In France the legislature has fully realised this. When, in 1880 and 1913, it laid down the conditions which were to apply to the operation of light railways, it was careful to define — in agreement with the concessionnaires — the procedure whereby it should reimburse itself by way of a share in profits.

I consider this absolutely equitable, and in saying this I speak not as a representative of the State but as a railway official, I consider it is in our own interests to be able to say to the conceding powers : We do not ask you always to provide us with financial assistance, even though we may not need it; on the other hand we undertake to give you, at some future date, a share in excess profits.

I consider this paragraph to be in opposition to the principle recognised by us in adopting the first paragraph. I therefore, propose its deletion, unless anyone can put forward valid reasons for its retention.

Mr. Bouteau (in French). — I cannot altogether agree with my friend, Mr. Level. To my mind there can be no question of deleting the paragraph, though we might make it more explicit.

I think we must agree to the participation of the conceding power in net receipts, but not in gross receipts. I personally am prepared to give the State a reasonable share of my profits; I am quite certain that I shall not be giving it very much, as the profits made by my company are not very great. (*Laughter.*)

I should, therefore, be prepared to agree to a wording recommending the participation of the State in net profits. This is, in fact, the attitude which is gradually being adopted in France.

The President (in French). — I think I may take it that the meeting is agreed in accepting the principle of the participation of public authorities in net profits. (*Yes, yes.*) It must, therefore, be stated in the text.

Mr. G. Ottone, Federation of Transport, Italy (in French). — I think there is some misunderstanding. If I am not mistaken, Mr. Level accepts the principle of participation in net profits, but not in gross profits.

In Italy we have two forms of participation : participation in gross profits and participation in net profits. The co-existence of these two forms of participation is absurd, and leads to very regrettable results. There are lines working with a deficit which still have to give a part of their receipts to the State.

I think we are all agreed in demanding the abolition of participation in gross profits. (*Signs of approval.*)

I would, in conclusion, suggest to the Reporter that it would be better to replace the words « participation of the State » by the words « participation of the conceding powers ».

Mr. de Souza (in French). — I am quite prepared to agree to the participation of the State in net profits, but not in gross profits.

In my country the light railways have to bear really excessive burdens. The State participates, so to speak indirectly, through taxation. Our lines have to pay various taxes, and there is even a possibility that additional ones will be imposed. The shareholders in the railway companies receive no dividends, and the situation will not improve unless drastic steps are taken.

I should, therefore, like to see the wording amended in the sense I have suggested, namely that participation in net



profits is logical, but participation in gross receipts is out of the question.

**Mr. V. De Benedetti** (in French). — In Italy there is a tendency in the direction of suppression of participation in gross profits. I consider, further, that this is a detail into which the Congress is not called upon to enter, the more so as the first paragraph is sufficiently explicit.

I do not, however, oppose the principle of the suppression of participation by the conceding powers in gross profits. I should, therefore, be willing to vote for a text which simply stated that this suppression is desirable.

**Mr. Giovanola**, Tessin Railway, Italy (in French). — I venture to suggest that in my opinion the question should be somewhat extended and the formula somewhat simplified.

We should not only contemplate the participation of the State in receipts; the conceding powers have imposed upon us a number of obligations, the most absurd of which is the obligation to bear a share of the cost of upkeep of roads. I will quote one case which is not without interest. I know of a light railway company which was compelled to increase its contribution to the provincial authority from the usual figure of 3 000-4 000 lire per kilometre, to 10 000-12 000 francs per kilometre, because the cost of upkeep of the roads has increased considerably owing to the heavy wear occasioned by motor-buses and heavy lorries which run in competition with the railways.

I consider that we should say that any claim or participation which is not calculated on net profits is irrational.

**Mr. F. Level** (in French). — I agree with the remarks made by Mr. Ottone and

**Mr. Giovanola**, and I beg to propose the following wording :

« The principle of the participation of the conceding powers in the gross receipts of light railways, being irrational from the point of view of operation and opposed to the public interest should no longer form a clause in legal agreements and should be replaced by participation in net receipts. »

**Mr. G. Ottone** (in French). — Instead of « net receipts » let us say « net profits ». The term « net receipts », taken as the mere difference between working receipts and expenses, might not, according to certain fiscal interpretations comprise taxes, administrative expenses, renewal funds, etc. The expression « net profits » would be more precise.

**Mr. Launay** (in French). — I agree with Mr. Ottone's suggestion. I think we might say in the opening sentence that participation in gross receipts is irrational and opposed to the public interest, and then say that the participation of the public authorities should be limited exclusively to net profits.

**The President** (in French). — This is the wording now proposed :

« The principle of the participation of the conceding powers in the gross receipts of light railways, being irrational from the point of view of operation and opposed to the public interest, should no longer form a clause in legal agreements and should be replaced by a participation limited exclusively to net profits. »

**Mr. Van Leeuw** (in French). — After the words « in legal agreements » we should add : « and deeds of concession ». (*Signs of approval.*)

**The President** (in French). — The

first proposition received by me is the more simple, and it is on this proposition that I will ask the Section to vote first. It is as follows :

« The participation of conceding powers in gross receipts should be replaced by participation in net profits. »

Mr. Vallecchi (in French). — I think it is absolutely necessary, in order to justify this proposition, to say that participation in gross receipts is entirely irrational.

Mr. V. De Benedetti (in French). — I see no necessity to say that the participation of public authorities in gross receipts is irrational. Such a statement might be considered as offensive by any governments which at present participate in this manner.

Mr. Bouteau (in French). — I think we should have the courage of our opinions, and that a Congress like ours should not hesitate to say that such and such a legislative enactment is irrational.

Mr. de Souza (in French). — I de-

mand that Mr. Level's proposition be put to the vote.

The President (in French). — Excuse me, I must first of all put to the vote the simpler proposition which I have just read out.

— This proposition is put to the vote and rejected.

The President (in French). — We have now to vote on the following text, proposed by Mr. Level and amended by Mr. Van Leeuw :

« IV. — The principle of the participation of the conceding powers in the gross receipts of light railways being irrational from the point of view of operation, and opposed to the public interest, should no longer form a clause in legal agreements and deeds of concession and should be replaced by participation limited exclusively to net profits. »

I now put this proposition to the vote.

— This paragraph is adopted.

— The meeting closed at 1.0 p. m.

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# DISCUSSION AT THE GENERAL MEETING

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Meeting held on 27 June 1925 (morning).

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THE RIGHT HON. VISCOUNT CHURCHILL, PRESIDENT, IN THE CHAIR.

GENERAL SECRETARIES : SIR HENRY FOWLER and MR. P. GHILAIN.

Sir Henry Fowler, *General Secretary*, read the final summary adopted by the 5th Section.

This final summary gave rise to no discussion.

The President. — The following is the

## Final summary.

« 1. — For the construction and operation of light railways, financial aid on the part of the conceding powers is generally indispensable.

« 2. — The conditions of construction and operation should combine the interests of the concessionnaires with those of the public. As a general rule it is necessary that the conceding powers should afford the maximum of facility and simplification so that the construction can be effected economically and that it may be possible to perform the service in a simple, economical, commercial and rational manner.

« In addition to this, the Congress draws attention to the findings adopted by the Rome Congress in 1922 which showed clearly the great differences that existed between the working conditions of the employees on main and light railways, differences that must be given the greatest consideration if the

« working of light or secondary railways is not to be imperilled. »

« 3. — Except in cases where adequate compensation is made, new lines must not be burdened with a load of services, free or at reduced rates, the cost of which should fall upon the conceding powers, who would have to bear them if the light railways were not constructed.

« Attention should be drawn to the disastrous effects upon the interests of the light railways brought about by the development of motor-bus services and by the very considerable reductions in rates in suburban areas which the main railways are able to make owing to subsidies received directly or indirectly from the public authorities. »

« 4. — The principle of the participation of the conceding powers in the gross receipts of light railways being irrational from the point of view of operation, and opposed to the public interest, should no longer form a clause in legal agreements and deeds of concession and should be replaced by participation limited exclusively to net profits. »

— This final summary was adopted by the General Meeting.

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## QUESTION XV.

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### TRACTION FOR LIGHT RAILWAYS.

A) *Special systems of traction for light railways.*

B) *Rail motor traction.*

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#### Preliminary documents.

1st report (America and British Empire), by Brigadier-General H. O. MANCE. (See English edition of the *Bulletin*, November 1924, p. 1007, or separate issue [with red cover] No. 7.)

2nd report (other countries), by Mr. DE

CROËS. (See English edition of the *Bulletin*, April 1925, p. 993, or separate issue [with red cover] No. 32.)

Special reporter: Mr. DE CROËS. (See English edition of the *Bulletin*, June 1925, p. 2157.)

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## DISCUSSION BY THE SECTION

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Meeting held on 26 June 1925 (morning).

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Mr. G. SEMENZA, PRESIDENT, IN THE CHAIR.

— The meeting opened at 9.30 a. m.

The President (in French). — We will now deal with question XV: « Traction for light railways ».

I will call upon Mr. De Croës, *Special Reporter*.

Mr. De Croës then read his special report which was published in the June 1925 number of the *Railway Congress Bulletin*, p. 2157.

The President (in French). — I shall certainly be expressing your wishes in offering Mr. De Croës our congratulations and thanks for the very able report which he has presented. (*Hear, hear!*)

I will now declare the discussion open and call upon Mr. de Souza.

Mr. de Souza, Ministry of Commerce and Communications, Portugal (in French). — I should like to give the Section some information on the situation in Portugal in connection with the subject which we are considering.

We have in our country — exclusive of the colonies — about 435 miles of 3 ft. 3 3/8 in. gauge lines, steam locomotion being solely employed. The engines are of several types. Latterly *Mallet* type engines have been introduced which are capable of hauling heavy loads over lines in hilly country, and which

have given good results, as have also superheater engines of the *Mikado* type.

However, for the lines where the passenger traffic is very important, it is considered that it would be advisable to use rail cars. At the time when I was on the State Railways, Purrey steam rail cars were introduced with Serpollet type boilers, but the results which they gave were not at all satisfactory. German rail cars built by Borsig, with vertical boilers, and the engine on a separate bogie were then introduced and gave satisfactory results.

In our country there is no question at the time being of using electric traction for light railways, because of the high cost of conversion, and because the passenger traffic is not sufficient to justify the expenditure. The Portuguese rivers are, moreover, very irregular and may dry up entirely in Summer, and it would be very costly to construct reservoirs. It would therefore be necessary to have in addition to hydro-electric stations, thermo-electric stations for this period of the year, and this would entail considerable capital expenditure.

However, there is a question which appears on the agenda upon which I should like to obtain some information, that is the question of petrol rail cars. There are in France and in Italy some very interesting types of these vehicles. In Italy there is a type which has this feature, that the engine can be easily separated from the chassis so that the latter need not be kept out of service during repairs to the engine. These cars have several speeds and are capable of carrying a considerable number of passengers, while other vehicles may be attached as trailers.

In France, petrol rail cars have, I think, given good results. In this country I believe there are several very

efficient types, and I should like to obtain some information in this respect.

In Portugal, we are very much interested in these questions and are enquiring whether it would be advantageous to introduce these new types. In our country the roads are somewhat narrow and often in a bad state of repair, and therefore we are not very much concerned with competition on the part of motor omnibuses.

**The President** (in French). — I have to thank Mr. de Souza for the information he has just given us.

In order to avoid confusion in our discussion, we should, I think, deal successively with the three paragraphs of the final summary of Mr. De Croës' report: the first dealing with steam traction; the second with the application of electric traction and the third with internal-combustion traction. (*Marks of approval.*)

I will therefore open the discussion on the first paragraph put forward by the reporter:

1) That steam traction is still the system of most general utility. It does not, however, appear that, as far as light railways are concerned, there is any prospect of appreciably reducing the present high cost of this system.

**Mr. Sapin**, Tarn Departmental Railways, France (in French). — I should like to give you a few details as regards the Restucci steam valve.

This valve has been tried in France and has given excellent results. It has led to an economy of from 17 to 25 % of fuel. Even where employed in unskilled hands, it has allowed an economy of about 20 % in coal consumption to be realised.

The tests which we are carrying out in France show clearly that it is possible to effect important economies in steam

traction. I think that the steam locomotive will be in service for a long time yet on our light railways.

I should be very glad to give any of my colleagues further details on the results which have been obtained on our light railways in France.

Mr. H. A. Watson, London & North Eastern Railway. — Mr. President and Gentlemen, I understand the Chairman only wishes us to speak at present with regard to steam traction, and therefore I do not propose to say anything more at this stage upon the subject referred to, except to give you some information regarding the experiment which has lately been carried out largely under my supervision with regard to the *Sentinel Cammell* steam rail locomotive, that is a new type of locomotive which has been brought out which promises very well. There is reason to believe that for its horse power it is a very efficient engine, and without entering into detail as to what this machine can do I should like to inform those present that in the last month a locomotive of this type with a horse power of 112 to 115 was built to pull a train weighing 500 tons on the level ground. Now, I think that is a performance which has not hitherto been performed by such a small steam engine, and having this information and other information which can be supplied with regard to previous trials by the same type of locomotive in one of the yards at Crewe belonging to the London Midland & Scottish Railway, I do not agree with the sentence in the summary of Mr. De Croës' paper, in which he says it would appear difficult to effect any appreciable reduction in the cost of working. I am one of those who feel sanguine that we are still able to look forward to a very substantial reduction in working small

quantities of traffic, no matter whether they are on a light railway or on a standard gauge railway. We in this country feel that the two questions run very much together, and I should like to suggest to the members of this section that we can still look forward to a substantial reduction in the cost of steam working under both these conditions.

Mr. F. Level, Railways of local interest, France (in French). — I should like to support Mr. Watson's point of view. We consider that the steam locomotive is still, generally speaking — I would lay stress upon this wording — the best method of working light railways.

I regret that I must disagree with the reporter with regard to the second part of the first paragraph, which is worded as follows :

« That steam traction is still the system of most general utility. It does not, however, appear that, as far as light railways are concerned, there is any prospect of appreciably reducing the present high cost of this system. »

Messrs. Sapin and Watson have just given us examples showing how progress and economies may still be effected in steam traction. The Congress should not discourage research by any pessimistic statements.

It appears to me that this wording might be replaced by the following :

« It appears desirable, however, to investigate suitable means of reducing the working costs. »

Mr. De Croës, *Special Reporter* (in French). — I have no objection to Mr. Level's suggestion. It is certainly desirable to pursue investigations with the object of rendering steam traction less costly.

What I had in my mind in preparing



the wording which I have put forward, was simply to make a comparison between steam traction and the other methods of traction. Steam traction has arrived at a more advanced and developed stage than have the other methods of traction.

There is obviously no reason why the second portion of my first paragraph should not be replaced by the wording proposed by Mr. Level.

Mr. Forbes, County Donegal Railways Joint Committee, Ireland. — Mr. President and Gentlemen. It may interest you to know that the Donegal Railway was the first narrow gauge line in the United Kingdom to adopt superheating. The result of the adoption of superheating on our line reduced our actual consumption of coal by from 20 to 25 %, although it was thought that on a narrow gauge line with frequent stoppages superheating would not be effective. However we have been so satisfied with superheating that we are gradually fitting all our engines. Now these engines are quite suitable for what I might call our main line traffic, but our difficulties come in when dealing with branch lines, where we have a very light traffic. Most of our branch lines run through very thinly populated districts, and we find running an engine weighing 40 tons is most uneconomical. Now here we are up against the question of personnel and in that respect I do not think the steam car will assist us, because under our present labour conditions we have to employ on a small branch line of say 25 miles, two drivers, two firemen, two guards and a cleaner. Therefore if we have to use a steam engine on these branch lines we shall be required to still have a driver and a fireman on each engine. What we are looking for is a petrol engine that will not only be suitable for passenger traffic but will

also haul a limited quantity of goods traffic. In that case we would only require a driver besides the guard; and wages at present are so high that it is a very important factor in working a light railway to reduce expenditure on personnel. I trust from what has been said that we may hear from some of the members, who are experimenting with this kind of prime mover capable of hauling not only passengers but a limited quantity of goods, say three or four wagons, so that we may get some help from them as to a suitable power unit to use in that connection.

Mr. Mellini, Sardinian Light Railways, Italy (in French). — I think that one can still improve the steam locomotive, but I should like to mention the results obtained with heavy oil: I am referring to the Bagnulo locomotive, with which preliminary trials have been made on the Piemont Light Railway.

These trials commenced a fortnight ago, with favourable results. While the ordinary locomotive consumed about 9 kgr. of coal per train-kilometre (31.9 lb. per train-mile), the consumption of fuel oil has been reduced on the Bagnulo locomotive to 0.9 kgr. (3.19 lb. per train-mile).

It is therefore possible to make considerable improvements in steam traction, and for this reason I support Mr. Level's proposal.

The President (in French). — I think that everybody will agree in saying that the steam locomotive is still capable of considerable improvement which will lead to a saving in the cost of traction. (*Signs of approval.*)

The Section therefore is in agreement with the wording proposed by Mr. Level.

Mr. Thonet, Lombardy and Romagna

Tramways, Italy (in French). — Instead of saying « It appears desirable » it would be better to say « It is desirable ». In this connection, I might mention that the *Garratt* locomotive, in which the boiler is carried upon two bogies, each provided with driving wheels (we shall see one on exhibition at Darlington) replaces two ordinary locomotives on lines with heavy gradients and effects an appreciable economy.

Mr. F. Level. — I agree.

The President (in French). — I will therefore put to the vote the first paragraph thus re-worded :

« 1) Steam traction is still the system of most general utility. It is, however, desirable to carry out investigations with a view to reducing the costs of this system of traction. »

— This paragraph was adopted.

Motion by Mr. Ottone as regards the final summary adopted by the 1st Section in connection with level crossings.

Mr. G. Ottone, Federation of Transport, Italy (in French). — I should like to call attention to the findings arrived at yesterday by the 1st Section on the subject of level crossings.

These findings may perhaps be acceptable for the main lines, but they are not suitable, or at any rate are only partially suitable for light railways.

I would ask whether it would not be possible for us to discuss the question and also put forward our point of view.

Some of the measures recommended by the 1st Section have given rise to serious difficulties in Italy, and the Government has had to suspend the application of the regulations which it has adopted; the liability which they would impose upon the light railways being altogether exces-

sive. Moreover, we cannot put before our Government recommendations which are absolutely contrary to the opinions we have expressed in the past.

I hope that you will be disposed to consider this question before a decision is taken by the general meeting.

The President (in French). — The subject raised by Mr. Ottone does not appear upon our agenda. However, if you wish to discuss it I will not offer any objection.

In the event of your wishing to do so, it appears desirable that Mr. Ottone should lay before us a resolution upon which we can come to a decision this afternoon.

Mr. F. Level (in French). — I support Mr. Ottone's proposal.

In No. 4 of the *Daily Journal*, page 4, you will find the final summary, adopted yesterday by the 1st Section, on the subject of level crossings. This Section considered that it would be possible to abolish gatekeepers at level crossings (which is the general practice in our country) under certain conditions. The approach to level crossings should be notified to road users by signals which are visible by day and night, and it would be necessary to have apparatus which give warning of the approach of trains; luminous signals and audible signals.

You are well aware that we have always refused to provide warning posts outside the railway property. We consider that the road users associations should deal with this matter and make the necessary provision themselves. You will appreciate that we cannot exercise any control over these warning posts, and consequently we should not take the responsibility for accidents which may

occur through the removal or bad condition of these posts.

Paragraph 11 of the final summary adopted by the 1st Section reads as follows :

The cost of fixing and maintenance of announcing apparatus at level crossings where supervision has been dispensed with, could be distributed between the railway administrations and the authorities interested in traffic on the roadways.

We cannot agree that the expenditure should be divided in this manner, as in our opinion the expense should be borne by the authority who keeps the public road in repair and by the road users.

I therefore support Mr. Ottone's motion, and I would ask our colleague to prepare a resolution on these lines for the next meeting.

**Mr. de Souza** (in French). — In Portugal, the companies have often quoted the recommendations of previous Congresses in order to obtain the abolition of gatekeepers at certain level crossings. The provision of these gatekeepers is very costly, especially for light railways, therefore it is rather surprising that the 1st Section's final summary does not make any distinction between important lines carrying heavy traffic and light railways.

I therefore consider that some amendment should be made in this paragraph of the final summary adopted by the 1st Section, and I support Mr. Ottone's proposal.

**Mr. Ravenek**, Ministry of Waterstaat, Holland. — I was present at the meeting of the 1st Section, and I think I may say that the final summary referred only to main lines of standard gauge and not to light railways.

**Mr. G. Ottone** (in French). — In any case I would point out that nothing is said in the final summary of the first Section, to show that it applied solely to main lines and not to light railways.

The latter should not be obliged to erect signals at level crossings, as this would entail altogether too heavy expense and responsibility.

I note with pleasure that we are unanimous in proposing an amendment to the final summary adopted by the 1st Section.

**Mr. F. Level** (in French). — I do not see anything in the final summary of the 1st Section which says that it does not apply to light railways.

On the other hand, it would appear from paragraph 10 that this applies to all the companies and administrations which belong to the International Railway Congress Association.

The wording should therefore be amended. It should state that the said recommendations do not apply to light railways.

**Mr. Barnet Lyon**, Ministry of Waterstaat, Holland (in French). — I would like to point out that in Holland light railways are not obliged to provide gatekeepers at level crossings. The paragraph adopted by the 1st Section on this subject cannot apply to light railways.

I therefore agree with my colleagues in asking Mr. Ottone to prepare an amendment to the paragraph in question.

**Mr. Launay**, Western French African Railways (in French). — I agree with what has been said. The text adopted by the 1st Section cannot apply to light railways.

**Mr. Bouteau**, Local Railways, France (in French). — I think it would be as well to proceed with our amendment of



the paragraph adopted by the 1st Section.

It is certain that working conditions are not the same on main lines and on light railways. On the latter the speed is less and therefore the danger at level crossings over our lines is not so great.

I would draw Mr. Ottone's attention to this point.

Mr. Sapin (in French). — I propose that the discussion should now be closed.

The President (in French). — We are in agreement I think in closing this discussion. (*Unanimous approval.*)

The discussion is therefore closed.

I will ask Mr. Ottone to lay before us this afternoon a draft resolution on the lines of the remarks which have just been made.

The President (in French). — Before closing the meeting, I would like to express the thanks of the Section to Mr. Mariott for the admirable organisation of yesterday's fete at the Crystal Palace. (*Prolonged applause.*)

I take it from your applause that this proposal is adopted.

— The meeting terminated at 12.5 p. m.

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Meeting held on 26 June 1925 (afternoon).

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Mr. BALS, VICE-PRESIDENT, IN THE CHAIR.

— The meeting opened at 2.30 p. m.

The President (in French). — We will now resume the discussion of question XV.

We had got to the second paragraph of the final summary which is worded as follows :

2) The adoption of electric traction depends essentially on financial considerations. The latter differ according to the conditions prevailing on the different lines. In proportion as initial expenditure and working expenses diminish, it will be possible to develop the use of this system of traction.

If nobody wishes to speak, I will put this wording to the vote.

— The wording was put to the vote and adopted unanimously.

The President (in French). — We will

now proceed to examine the third paragraph proposed by the reporter :

3) That the combustion engine system of traction is at present advantageous in certain cases, and that it will doubtless be used to an increasing degree on light railways.

The discussion is now open, and I will call upon Mr. G. Level.

Mr. G. Level, Light Railways, France (in French). — A long experience with petrol rail cars leads me to warn the companies not to be too rash in the introduction of these vehicles.

It must be borne in mind that in a rail car the vibrations set up by the internal-combustion engine are transmitted very harshly to the rail, as we have steel running upon steel, and the wheels are not provided with rubber tyres.

It follows that the upkeep of the en-

gine is much more serious in a rail car than in a road motor vehicle.

I cannot therefore support the wording proposed by Mr. De Croës, and I propose the following wording :

« Traction by means of internal-combustion engine at the present time offers some interesting features which may perhaps become advantageous in the future.

« It is desirable that at the next Congress definite information should be available as regards working expenses, depreciation and particularly of the cost of upkeep of rail cars. »

Mr. Verhoop, Ministry of Waterstaat, Holland. — The problem of the petrol car is also met with in Holland. Not only the principal railways but also some steam tram Companies put such cars into service. All these cars have mechanical transmission, and there are many different types of them, their weights varying from 9 t. to 34 t. The variable speed gear of the heavy cars of the principal railways, is actuated by compressed air, and the gear of the other cars up to 22 t. is operated by hand. Although definite results have not yet been published, it may be mentioned that the mechanical drive is the weak point in the construction not only as regards maintenance, but also consumption of fuel and noise when driving in other gear than direct. In their present form these cars do not enable one, generally speaking, to save in working costs. Inspections and repairs, and higher fuel costs nullify the saving in wages.

For these reasons I propose that this Section should state in its summary that improvements in the transmission, and the use of reliable internal-combustion engines, fitted for the use of cheap liquid fuel, are very indispensable.

Mr. Mellini (in French). — I should like to put before the Section some information on the question which we are dealing with at present : petrol rail cars.

The Italian Ministry of Public Works has collected a large amount of information on this subject. I am convinced that this field offers us possibilities of successful innovations.

We have experimented with Diesel-electric locomotives of 300 to 400 H.P., both for working fast trains (60 to 70 km. [37 to 43 miles] per hour) and for railways with heavy gradients (40 to 60 per mil), and we have also tried tractors and rail cars of moderate power (120 to 160 H.P.) and small rail cars (40 to 90 H.P.).

I will first refer to the tractor built by Messrs. Fiat of Turin. This is a Diesel-electric engine of 400 to 440 H.P. which is intended for service on the Calabro-Lucane narrow gauge line (3 ft. 1 3/8 in.) with gradients of 1 in 16.5. This tractor was first tested on the Biella-Balme line (in Piemont). The results were very satisfactory, in spite of the somewhat excessive vibration which was experienced at first in the driver's cab. After certain alterations, these vibrations were appreciably reduced.

Another tractor has been constructed by Messrs. Tosi of Legnano. It is intended for use in flat country and it will be able to attain a speed of 37 to 43 miles per hour and develop 360 H.P. It was shown at the Milan Exhibition, and the trials will commence shortly. We shall not be able to give any definite information until after about six months.

We have also made experiments with petrol rail cars. You know that in Italy petrol is very dear, and we have looked into the possibility of using heavy petroleum and paraffin, which is cheaper than petrol. After several months of

research, Messrs. Fiat have produced a 150 H.P. tractor using paraffin which is capable of attaining a speed of 34 miles per hour and which fulfils the needs of the traffic on secondary railways where the traffic is light. If the results which are anticipated are realised, we shall be able to extend this method of traction to a large part — 30 to 40 % — of the Italian light railway system.

We have also rail cars built by Messrs. Alfa Romeo of 100 to 160 H.P. These somewhat resemble some of the German rail cars. They can run at 34 to 37 miles per hour with a load of 25 t. and can accommodate 120 to 130 passengers.

We have finally some small rail cars, of less than 100 H.P. and some of only 40 H.P. made by Messrs. Fiat of Turin. These are already under trial, and Mr. Vallecchi could give you some information on this subject. I think that they are very suitable for lines with very light traffic.

The question of the use of rail cars is still in the experimental stage. One can only say that this method of traction is very promising. We shall soon have to have a number of tests and a number of experiments. However, I think that we can still considerably improve the existing types. The principal object is to obtain a higher speed, while reducing the cost of working. If we can obtain better results from this point of view, we can very easily meet the competition of the motor buses.

These experiments and tests have had another advantage: they have led us to seriously consider the improvement of the steam locomotive, which has remained much as it was 20 year ago, at any rate on the light railways. (*Applause.*)

Mr. H. A. Watson. — Mr. Chairman,

I think perhaps the Congress will be interested in hearing the results of some experiments that have been made on the London & North Eastern Railway with internal-combustion motors. About two years ago the Company altered one of their buses that was running on the roads with ordinary pneumatic tyres, and fitted it with wheels with standard locomotive profiles; a compartment was also added at the opposite end so that it could be driven in both directions. This coach has been running about 150 miles per day with complete satisfaction, and the costs of providing this service came out at the moderate figure of 4 d. per mile. The whole weight of the coach is only 6 tons and it has seating accommodation for 28 passengers. It is a very economical method of carrying passengers on a railway; in fact I do not know of any methods so economical at present in existence, certainly in this country.

The next step we took was to build a more powerful coach with a petrol motor of rather higher horse power. I ought to add that the horse power of the engine in the converted road bus is about 35.

This second motor which we built complete at our own Company's shops is a motor of 100 H.P. and, the total weight of this car is 17 tons, and that car seats 36 passengers. It has not been long enough in service to give an accurate statement as to what the cost amounts to, but it has performed its work quite satisfactorily, and we have not had any trouble with breakdowns of the mechanical parts. With regard to the speeds of both these motors they run about 35 miles per hour after acceleration, and for a motor of the power which they have they accelerate to full speed quite quickly.

I can hardly give you the exact number



of minutes or the distance it has to travel before it reaches full speed, but it is much about the same as the time occupied on an ordinary steam train which stops at all stations. As a matter of fact we are able to make a time table for these vehicles which is very nearly as quick as for an ordinary steam train running over the same part of the railway.

The third experiment we made was made upon a light railway near York, and that experiment consisted of taking two Ford motor chassis, fitting them with wheels with standard locomotive profiles, fastening them back to back, and putting a body upon each. The advantage of that is that whichever direction the twin is running you always have a motor at the leading end, and when the bus, as we call it, gets to one end of its journey, all that is necessary is for the driver to go to the other end of the car and go in the opposite direction, using the other motor for traction, so that at all times one vehicle is acting as the motor vehicle and the other vehicle is acting as the trailer vehicle. This twin coach has been running since October of last year, and as far as we can estimate up to now it may be taken that the cost of providing that vehicle, maintaining it and working it, does not exceed 5 d. per mile, and that car has seating accommodation for 36 people, so that there again you have what is in my opinion a very economical form of railway train. If you can carry 36 passengers for 5 d. per mile it ought to be a satisfactory proposition from the financial point of view. I may say that we are very satisfied with the result of those trials. In fact so satisfied are we that it is now in contemplation to get larger motors and fasten them back to back, so that you still will have a motor at each end, and one coach will be acting as the

motor coach, and the other coach will be acting as the trailer coach according to the direction in which the two vehicles are travelling, and the combination coach will carry 60 passengers.

We have formed the conclusion that for practical purposes, and considering the conditions under which our traffic is handled in the northern part of England, the scope for petrol passenger coaches may be taken as round about 60 passengers. When the number to be carried exceeds 60 there are practical reasons which of course may not apply to other companies, or to other parts of the country which make it more advantageous from many points of view to adhere to the system of steam traction, which of course is the standard system upon all the railways certainly in this country. I therefore am of opinion that the clause in the summary of the report that we are discussing might be worded in language which might make people think that the internal-combustion engine has got past the stage of its infancy. I feel that the results that we have obtained entitle us to consider that we are getting to the stage of being grown up as a practical method for carrying passengers by rail, and personally I should like to see this summary worded rather in language which will give those who read it, when it comes to be published, the impression that internal-combustion engines have quite a good field in the future as a method of carrying passengers by rail.

I only want to say one word further with regard to our experience of the use of petrol locomotives for merchandise traffic. We have experimented with a petrol locomotive of 56 horse power in working the merchandise traffic on this light railway near York, to which I have just referred, and the result of our exper-

ience has satisfied us that on a branch line or on a feeder line, where you may expect quantities of about 40 to 50 tons of traffic to be handled at one time, this petrol locomotive is quite an efficient type of locomotive for that purpose. We have come to the conclusion here again, so far as our experience has gone, that the field for the use of internal-combustion engines with regard to merchandise traffic is clearly established up to loads of about we may say 50 tons at a time. (*Hear, hear and applause.*)

Mr. G. Semenza then took the chair in place of Mr. Bals.

The President (in French). — I have to thank Mr. Bals for taking my place during my absence.

Brigadier-General H. O. Mance, *Reporter*. — I should like to ask Mr. Watson one question regarding his most interesting statement. He referred to two vehicles, one of 6 tons and 35 H. P. which conveyed 28 passengers, and one of 17 tons and 100 H. P. which conveyed 36 passengers. What was the advantage of the 17 tons car at 100 H. P. over the 6 tons car at 35 H. P., considering that the bigger car only conveyed 8 passengers more than the small one?

Mr. H. A. Watson. — There were three reasons for doing what we did. The first reason General Mance has mentioned, and that was that we were able to carry 8 more passengers. The second reason was that we were able to build a rather more luxurious vehicle which made the passengers more comfortable, and gave them more room to sit in, and we thought it would be more popular. The third reason was that by building a more expensive vehicle we were able to place the motor in such a position that the vibration of the motor was not so much felt by the passengers. We built a more ex-

pensive vehicle because it was a higher class vehicle in some respects, and was more comfortable when travelling.

Mr. Lo Balbo, *Piemont Steam Tramways, Italy* (in French). — I should like to say that in Italy we have two types of rail cars with internal-combustion engines built by the « Société anonyme Italienne, Ing. N. Romeo », Milan :

- 1) 100 H. P. rail car;
- 2) 160 H. P. rail car.

The engine has six cylinders, the carburettor being suitable for a mixture of petroleum and petrol (one-third petroleum and two-thirds petrol). The saving in wages and fuel is considerable, and the speed attained is 31 to 37 miles per hour over an undulating road.

The Fiat Company of Turin are at the present time also constructing rail cars with internal-combustion engines. The Government have granted substantial subsidies to the companies who carry out experiments with these vehicles. In a few months time we shall know exactly the results of the trials which are in progress.

I support the proposal to bring up this question at the next Congress.

Mr. Vallecchi, *Federation of Transport, Italy* (in French). — I am the President of a company which is formed for the construction of a new type of internal-combustion motor, which is that built by the Italian Ferrautovie Company.

The rail cars which are constructed are light; they develop 38 H. P. weighing no more than 5 tons and seat 40 passengers. They have already been in service for passenger traffic on the Massa-Fallonica line in Tuscany. The fuel, lubrication and ordinary repairs only cost 40 centimes per kilometre.

We are about to construct a second type of 100 H. P. which will, we hope,

convey about 80 passengers. I believe that these rail cars are the vehicles of the future for light railways.

**Mr. F. Level** (in French). — I wish to support what the preceding speakers have said on petrol rail cars.

In France we have also carried out, in the last two years, experiments with this new method of traction. In the first place I should say we commenced by converting a road motor bus by replacing the pneumatic tyres by railway tyres. Under certain circumstances we obtained good results. The disadvantage of these vehicles is that they only run in one direction. We overcame this by means of a simple turning arrangement under the vehicle.

We then proceeded to build special vehicles of stronger construction of ordinary railway type weighing 8 to 8 1/2 tons empty. These rail cars could run in either direction, and we thus overcame a difficulty which is not insuperable, as some consider, but which is rather troublesome. This vehicle had a 30 H. P. motor and consumed about 30 litres of petrol per 100 km. (10.62 British gallons per 100 miles). It accommodated 45 passengers; 30 sitting and 15 standing. It weighs 8 tons empty, or about 11 tons when loaded. The results have been quite satisfactory.

In my opinion, the problem with rail cars is not so much a traction problem, that was already solved when the internal-combustion engine came to the degree of perfection which we know to-day; it is rather a problem of operation. It is a question of knowing how to use the type of vehicle which we propose to build, and therefore of deciding upon the size of vehicle suitable for the purpose for which it is intended.

Since the war, we have found that we

have not been able to operate certain lines carrying light traffic as we did formerly; it was therefore necessary to reduce the considerable expenditure which they entail at the present time, especially where the traffic is insufficient to justify steam traction. In order to meet the requirements of the public, we have therefore turned to the use of rail cars on sections carrying light traffic.

With a vehicle of the type which I am going to describe in a moment, we are able to carry 45 passengers over gradients not exceeding 1 in 66. Moreover, we can when necessary haul two 10-t. freight wagons.

We consider therefore that this is an advantageous method, because, on the one hand, we satisfy the public, and on the other hand, we decrease our expenditure, but it must be understood that for sections carrying heavy traffic, it would appear, at any rate for the time being, that steam traction must be used.

I cannot give you exact figures for the method of operation under discussion, because we know nothing as yet as regards renewals and heavy repairs to the rolling stock, as the test has not been of sufficiently long duration. All that we know definitely is that the total expenditure will be less than that with steam traction.

We should therefore, in my opinion, be more definite in the wording of the paragraph of the final summary. I propose that it should be worded as follows :

« Traction by internal-combustion engine offers an advantageous solution to certain operating problems; it appears full of promise for light railways and should be financially encouraged by the conceding authorities. »

**Mr. Verhoop.** — I simply wish to add



that the difficulties which I have mentioned do not apply to the very light vehicles which we also use in Holland.

Mr. Vallecchi (in French). — Mr. Level has just told us that the problem of the rail car is not a technical problem, as that has already been solved. Allow me to say that in Italy it is quite a technical problem which we have to face, because we are obliged to use heavy oil, as the price of petrol is absolutely prohibitive in our country.

Mr. G. Level (in French). — After the interchange of opinions which have just taken place, I withdraw the draft wording which I had suggested.

I should like, however, to add to the existing text the following words :

« It is desirable that information should be laid before the next Congress as regards the cost of traction, maintenance and depreciation of petrol rail cars. »

Mr. Gillet, Belgian Bas Congo-Katanga Railway (in French). — I consider that we should replace the words « petrol rail cars » by « internal-combustion engine ». As a matter of fact, there are in the colonies, motors which use locally produced fuels, such as alcohol and wood charcoal.

This modification of the wording prevents any possible confusion.

Mr. Seydoux, Indre Tramways, France (in French). — I support the views advanced by Mr. Level.

I represent a company which was the first in France to employ petrol rail cars. We have some which have been in service for three years and are quite satisfied. They are used for passenger service, but we are now thinking of using them for goods traffic. The great advantage of this method of traction consists in the reduction of the working costs.

Brigadier-General H. O. Mance. — I would like to refer to two points, one of which is the question of how to handle the goods traffic on branch lines where the passenger traffic is handled by motor coach. Major Watson referred to the petrol locomotive for handling small loads up to 40 or 50 tons, and another speaker referred to the two 10-ton wagons which were drawn by the motor passenger coach. It seems to me that one of the greatest hindrances to the adoption of these internal-combustion coaches on branch lines is the question of how to convey the goods traffic on those lines, and I had hoped there would have been more experiences relative on that point.

The other question of some importance arises when you have to increase the capacity of the trains on special occasions such as market days, when an unusual number of people want to travel at the same time. It is obviously not economical to have a steam train service some days and a petrol train service on other days, and the question is how is one to reinforce the petrol service. It may be possible to couple two vehicles together and control them from one end by an electro pneumatic control, and a solution on these lines seems worthy of consideration.

Mr. De Croës, *Special Reporter* (in French). — It seems to appear from the discussion that the question of internal-combustion engine traction has been solved as far as concerns very light rail cars, but this is not the case at present for more powerful rail cars.

Under these conditions I would ask you not to make the first clause more definite than it is in my report.

The President (in French). — I think the discussion may be considered as now closed.

I will again read to you the proposed text :

« 3) Traction by internal-combustion engine offers an advantageous solution to certain operating problems; it appears full of promise for light railways and should be financially encouraged by the conceding authorities.

« It is desirable that information should be laid before the next Congress as regards the cost of traction, maintenance and depreciation of internal combustion rail cars. »

Mr. Launay (in French). — In the second paragraph it would be, I think, preferable to say « traction by means of internal-combustion or explosion motors ». (*Signs of approval.*)

The President (in French). — Does Mr. Level agree with this amendment?

Mr. F. Level (in French). — Yes, Mr. President.

Mr. Bouteau (in French). — I propose that we delete the words : « should be financially encouraged by the conceding authorities ».

The rail car question is not yet fully solved, and we should not induce the public authorities to enter actively into this question. Let us wait until we have some reliable information before coming to a decision on this question.

Mr. F. Level (in French). — I do not agree with Mr. Bouteau.

We have almost unanimously agreed that we have obtained some interesting results on this question. Why should we not therefore ask the conceding authorities to help us in the work with which we are occupied? For my part I do not see why we should not do so.

We should be in the van of progress, and not fight shy of any innovation which gives satisfactory results.

I am strongly of the opinion therefore that this portion of the wording should remain.

Mr. Vallecchi (in French). — Our Government has given us some financial assistance in this matter. If we do not accept Mr. Level's proposed wording we shall be, to a certain extent, criticising our Government, and this we cannot do.

Mr. Bouteau (in French). — I know cases where the conceding authorities have taken advantage of the introduction of rail cars to demand services which have considerably increased working expenses. I do not think it desirable that we should adopt Mr. Level's suggestion.

The President (in French). — Mr. De Croës proposes a wording which is a compromise. He suggests that we should simply say « deserve to be encouraged ».

He therefore proposes to delete the words « financially by the conceding authorities ».

Mr. Bouteau (in French). — I support this proposal.

The President (in French). — I now put to the vote the retention of the words « financially by the conceding authorities ».

— This proposal was rejected.

The President (in French). — The words « financially by the conceding authorities » are therefore deleted from the text.

I put to the vote the wording as thus amended :

« 3) Traction by means of the internal-combustion engine, at present, furnishes advantageous solutions with regard to certain working problems; it is full of promise for light railways and should be encouraged.



« It is desirable that some definite data on the cost of maintenance and depreciation in connection with rail motor coaches be submitted at the next Congress. »

— This wording was put to the vote and adopted.

\* \* \*

The President (in French). — It was decided this morning that we should hear this afternoon a report by Mr. Ottone on the subject of the final summary arrived at by the 1st Section regarding provision of gatekeepers at level crossings.

I will call upon Mr. Ottone.

Mr. G. Ottone (in French). — During the discussion which has taken place this morning, a number of speakers have very clearly put before us the dangers of extending to light railways resolutions adopted by the 1st Section. Under the restrictions which have been proposed by this Section, we should be going against the principles upon which we are almost unanimously agreed, that is, to introduce modifications in the legislation which will render it more in keeping with the needs of the companies which operate the lines. Without repeating what has already been so well stated by those who have taken part in the discussion, I will merely put forward the following proposal : Under the conditions of operation on light railways, the abolition of gatekeepers should not be accompanied by requirements which, in the majority of cases, would impose very onerous complications which are not necessary for safety on lines where the number of trains and their speed are generally limited. It should also be pointed out that these restrictions are not in accord with the terms of the majority of concessions for light railways.

Therefore, I would ask you to adopt the following addition to the paragraph of the final summary adopted by the 1st Section on the 25th of this month :

« The above recommendations apply only to large railways and do not refer to light railways.

Mr. F. Level (in French). — I had occasion this morning to see Mr. Ruffieux, who is the Reporter on this question in the 1st Section. He informed me that in his opinion there is no objection to a wording drawn up on the lines which has just been indicated being added to the paragraph of the final summary adopted by that Section.

He only asked me to submit our text to him by to-morrow morning, and he is prepared to support it.

Mr. Launay (in French). — It appears to me that the question should be divided. One should deal in the first place with the question of the necessity for providing signals, and then say who is to bear the cost of these signals. These are different questions both as regards their object and also from the point of view of the conclusions to which they should lead.

As regards the necessity for warning signals, I may say that it appears to me to depend upon the speed, the number of the trains and perhaps also upon the importance of the road traffic. One might perhaps agree to the final summary of the 1st Section for main roads and for speeds exceeding 37 miles per hour. There is no doubt that there is a certain amount of danger when running at such speeds. Less elaborate arrangements might be made for lower speeds and for roads carrying a less traffic; below a certain speed and for the less important roads, as may be decided, no warning signals at all would be necessary.

As regards the cost of the signals,



I should in the first place lay stress on the necessity of reducing the working expenses of our lines so that these should be freed from such costs. However it seems to me that one must also take into account the opinion of the administrations responsible for the upkeep of the highway. To sum up, I think that as regards this question the Congress should draw attention to the desirability of freeing the light railways from the cost of providing signals in order to reduce the expenses which they have to bear, pointing out that this is essential for the building and successful working of such lines.

In conclusion, I propose that we should adopt the following wording :

« The conditions of signalling at level crossings on light railways should depend on the speed and frequency of the trains on the one hand, and on the importance of the traffic on the highway on the other hand.

« Level crossings or roads which have not very heavy traffic and railways on which the trains run at low speed need not be provided with warning signals.

« In order to reduce the expenses which have to be borne by light railways, which is a condition essential to their being constructed and properly worked, it is recommended that they should be freed from all charges connected with the provision and upkeep of the signals in question. »

The President (in French). — It appears to me that we should not enter into all these details, but that we should confine ourselves to dealing with the question in a general manner. (*Approval by some of the members.*)

Mr. Gevaert, National Light Railways, Belgium (in French). — I quite agree with the President's point of view.

We have a proposal which has just been drawn up by Mr. Ottone, and it is upon this that we should give our opinion. It also expresses the unanimous or almost unanimous opinion of our Section.

It is not desirable in my opinion to enter into a detailed discussion of the question as Mr. Launay wishes to do. I would ask that we vote purely and simply on the wording which has been prepared by Mr. Ottone.

The President (in French). — I would like to make the same proposal.

Mr. Gevaert (in French). — I am very pleased that you agree with me.

The President (in French). — I consider that we cannot enter more deeply into this question because it does not appear on the agenda. I therefore ask Mr. Launay not to press this point.

If Mr. Ottone's proposal, which is drawn up in general terms is not adopted, I shall have to ask you to meet on Monday to examine the question more in detail or to postpone this matter to the next Congress.

Mr. Launay (in French). — I have no objection Mr. President. I only ask that my remarks should appear in the proceedings.

Mr. de Souza (in French). — I ask that we replace the words « large railways » by « main lines ». (*Unanimous approval.*)

The President (in French). — I put to the vote the text as thus amended :

« The above recommendations apply only to main lines and do not refer to light railways. »

— This wording was put to the vote and adopted.

Mr. Bouteau (in French). — I do not think that the views put forward by



Mr. Launay should appear in the proceedings. I do not wish to displease my esteemed colleague, but I am afraid that some day these arguments will be used against us. For this reason I should wish that only Mr. Ottone's wording should appear in the proceedings of this meeting.

The President (in French). — We have each a right to have the views which we have put forward quoted in the proceedings.

Mr. Launay (in French). — I ask that the views which I have put forward shall be quoted in the proceedings.

The President (in French). — It shall be done.

Motion by Brigadier-General Mance on the subject of the questions to be dealt with at the next Congress.

Brigadier-General H. O. Mance. — I would ask the President to read the proposal which I have submitted with the concurrence of my colleague Mr. De Croës, Mr. Marriott and Mr. Watson as regards the questions to be dealt with at the next Congress.

The President (in French). — General Mance proposes that the Section should suggest that at the next Congress the subjects dealt with by the 5th Section should be divided as follows :

« GENERAL HEADINGS :

« *Pioneer railways of penetration;*

« *Feeder railways;*

« *Rail motor cars (all railways).*

« QUESTION A :

« *The establishment of :* a) *pioneer railways of penetration in new countries;* b) *feeder lines in all countries.*

« QUESTION B :

« a) *Special systems of traction for feeder railways;* b) *rail cars.*

« QUESTION C :

« *The economic handling of small quantities of passenger and freight traffic on existing railways.* »

Do we agree in accepting General Mance's proposal?

Mr. M. Semenza, Federation of Transport, Italy (in French). — I accept General Mance's proposal. I should like, however, to see the question of the electrification of light railways placed upon the agenda for the next Congress as a means of improving the economic operation.

Brigadier-General H. O. Mance. — This question is included in what I propose.

Mr. M. Semenza (in French). — In General Mance's proposal the great advantages of electric traction as compared with other systems is not put in sufficient evidence. The wording « special systems of traction for feeder railways » is too general, and moreover electric traction cannot be considered as a special method of traction, seeing that it is one of the two systems generally adopted for railway working. I think therefore that it is necessary to clearly specify that the question of electric traction shall be examined, because of its great importance from the point of view of economical operation.

The President (in French). — Mr. Semenza's remarks will appear in the proceedings. This point will therefore be kept in mind.

I put General Mance's proposal to the vote, with the addition proposed by Mr. Semenza.

— This proposal was adopted.

Motion by Mr. de Souza.

Mr. de Souza (in French). — I believe I am expressing the sentiments of all the members of the Section in offering the President our thanks and congratulations for the impartial manner in which he has presided over our discussions. It is due to the efforts of our worthy President that we have been able to effect some useful and practical results for which purpose we have met here. (*Prolonged applause.*)

The President (in French). — I must thank you for your kind words. If we

have been able to deal fairly quickly with the important questions which appear on the agenda, it is because your remarks have been to the point and as concise as possible.

Mr. V. De Benedetti, Ministry of Public Works, Italy (in French). — I feel certain that I am voicing your wishes in thanking the secretaries, the translators and the stenographers. (*Applause.*)

The President (in French). — I declare the meeting of the 5th Section closed.

— The meeting terminated at 5.0 p. m.

## DISCUSSION AT THE GENERAL MEETING

Meeting held on 1 July 1925 (afternoon).

THE RIGHT HON. SIR EVELYN CECIL, VICE-PRESIDENT, IN THE CHAIR.  
GENERAL SECRETARIES : SIR HENRY FOWLER and Mr. P. GHILAIN.

Sir Henry Fowler, *General Secretary*, read the final summary adopted by the 5th Section.

— This final summary gave rise to no comments.

The President. — The final summary is therefore as follows :

### Final summary.

« 1. — Steam traction is still the system of most general utility. It is, however, desirable to carry out investigations with a view to reducing the costs of this system of traction.

« 2. — The adoption of electric traction depends essentially on financial considerations. The latter differ ac-

« cording to the conditions prevailing on the different lines. In proportion as initial expenditure and working expenses diminish, it will be possible to develop the use of this system of traction.

« 3. — Traction by means of the internal-combustion engine, at present, furnishes advantageous solutions with regard to certain working problems; it is full of promise for light railways and should be encouraged.

« It is desirable that some definite data on the cost of maintenance and depreciation in connection with rail motor coaches be submitted at the next Congress. »

— The General Meeting ratified this final summary.